Abstract

Advances in crime mapping technologies nationally, related data analysis and interagency law enforcement communication systems have significantly enhanced the ability of criminal justice agencies and policy makers to more effectively, efficiently and safely protect citizens and communities throughout the United States. As the third largest Correctional system in the United States, The Florida Department of Corrections has become recognized as a leader in the use of innovative technology, data analysis and applied research to carry out its public safety mission. The challenge facing this department and other state prison systems in the nation is how to utilize the wealth of data to consistently and systemically address institutional safety and facilitate the management of offenders. The department's primary goal is to create a correctional 'crime mapping" and information management system to monitor cross functional daily operations that can be quickly viewed by all levels of correctional management to identify trends, patterns, and areas of concerns within specific institutions and statewide. The proposed research question is: **Can enhancing traditional crime mapping technology to profile indicators of disorder influence the systemic interactions among operations, programs and policy development functions to create safer, more effective and efficient correctional systems?** The Department proposes to develop software that enhances existing 'crime mapping' tools to ensure long-term public, staff and inmate safety and security. Using mapping technology to display indicators of prison disorder will enable administrators to diagnose the health of an institution at a glance and use this information to prevent disruption.

The expected results include enabling FDC to reduce prison rape, staff assaults, the use of force, and escapes. It will serve as a national cost-savings model to track and analyze key indicators of prison disruption, including assaults, injuries, disciplinary reports, positive drug tests, and staff turnover, and promote the long-term safety of the public, staff and inmates.

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CROSS FUNCTIONAL SYSTEMIC TREND MAPPING IN CORRECTIONS:

Correctional Operational Trend Analysis System (COTAS)

Background/Need:

Advances in crime mapping technologies nationally, related data analysis and interagency law enforcement communication systems have significantly enhanced the ability of criminal justice agencies and policy makers to more effectively protect citizens and ensure community safety throughout the United States. As the third largest Correctional system in the United States, The Florida Department of Corrections has become recognized as a leader in the use of technology, data analysis and applied research to carry out its public safety mission. The innovative and strategic development and use of information and technology is considered *"mission critical"* to both institutional and community corrections operations and the Department's interface with other criminal justice agencies.

Over the past two years the Department's Bureau of Research and Data Analysis has worked with the Bureau of Classification and Central Records and the Bureau of Systems Development to determine how the advances in community policing crime mapping could be adapted to Florida's Correctional System. The Department gathers tremendous amounts of data on every significant aspect of correctional management of inmates, institutional procedures and processes, facilities operations and staff. The challenge facing Florida and other correctional systems is how to systemically utilize cross-functional data and trend analysis to effectively, efficiently and safely address all aspects of prison management. To date, the Department has invested significant financial and human resources to initiate the research and develop the ***Correctional Operational***

Trend Analysis System (COTAS). This system adapts the advances of crime mapping and the analysis of "hot spots" to integrate data and trend analysis into the operational management, decision and policy making of a correctional agency. COTAS merges information and technology into a web-based system using an innovative graphical user interface, crime mapping/GIS technology, and statistical trend analysis for correctional administrators.

Research Question / Problem and Project Purpose:

Can enhancing traditional crime mapping technology to profile indicators of disorder influence the systemic interactions among operations, programs and policy development to create a safer, more effective and efficient correctional system?

The Department proposes to develop software that enhances existing 'crime mapping' tools to ensure long-term public, staff and inmate safety and security by enhancing cross functional systemic interface between departmental leadership and correctional managers. Use of mapping technology to display indicators of prison disorder will enable administrators to diagnose the health of an institution at a glance, identify problem areas to prevent disruption such as prison altercations and riots. The department's primary goal is to create a correctional 'crime mapping' and information management system to monitor cross functional daily operations that can be quickly viewed by all levels of correctional management to identify trends, patterns, and areas of concerns within specific individual institutions, community corrections settings and statewide.

Research Goals and Objectives:

Goal 1: To develop a systems approach to disorder analysis that will enhance long-term safety and security. The review of data by and across correctional functions will enable FDC to:

Objective 1: Reduce officer injuries in FY06-07 by 15% from FY04-05 baseline of 466.

Objective 2: Reduce inmate injuries in FY06-07 by 15% from a FY04-05 baseline of 3,216.

Goal 2: Integrate the use of COTAS into management decision making and ensure inmates are managed efficiently, effectively and safely.

Objective 1: Reduce number of positive drug tests in FY06-07 by 15% from a FY04-05 baseline of 2,428.

Objective 2: Increase the corresponding ratio between inmate assignments and assessed need in FY06-07 by 10% from a FY04-05 baseline of 77%.

Goal 3: Utilize COTAS to review operational indicators of training needs to maintain and increase professionalism of staff.

Objective 1: By analyzing indicators of staff development, the department anticipates lowering staff turnover by 5% between July 2006 and June 2007.

Objective 2: Through analysis of staff training needs the Department will increase leadership and professional succession development training hours by 10% between July 2006 and June 2007.

Research Design and Methods:

Over the next seven months, the FDC will analyze data to determine which variables are indicators of institutional health, including violent misconduct and disorder. Using hierarchical linear modeling and a split-half cross-validation sample, the research team will analyze five years worth of data to find significant and substantive indicators of prison violence and disruption. Most prior research has focused on either the individual or aggregate level of data, leaving out the important interactions between the two levels. Inmates have various individual characteristics that may incline them to prison misconduct. Furthermore, we would expect there are characteristics about the prison in which they are housed that may also contribute to disorder. The results of this analysis will specify which indicators of disorder need to be displayed graphically and reviewed by correctional leadership on the crime-mapping prototype. Administrators will be able to quickly locate institutions that have an elevated risk profile and are in need of additional resources by utilizing the state-wide prototype mapping technology. FDC intends to seek validation of the statistical analysis by consulting with Florida State University's College of Criminology and Criminal Justice's Center for Criminology and Public Policy Research. Validation of the effectiveness of COTAS will be sought from the National Law Enforcement and Corrections Technology Center.

Traditional crime-mapping technology has focused on dependent or outcome measures, such as the location of burglaries and calls for service. Mapping independent or causal variables has been limited to population demographics such as percentages of female headed households.

FDC intends to map both disruptive and violent dependent variables as well as causal independent variables that pose a risk to institutional and officer safety. Disorder within in the prison will not be limited to just official disciplinary reports upheld. It will also include an inmate dissatisfaction scale composed of the grievances filed by inmates, regardless of whether they were upheld. Other indicators of disruption will include the number of positive drug tests, uses of force, number of homicides and injuries for inmates and staff, average confinement days and gain time lost for disciplinary purposes, number of close management recommendations, and the number of escapes and attempts. Significant indicators will be displayed on a statewide GIS map of all correctional facilities. By using statistical modeling and collaboration across functional units, the team will determine and map which facility, staff, and inmate level indicators are most relevant to determining disruption.

The strength of this project is founded on the use of the historical data to present information on environmental risks that pose a threat to public safety, staff, and inmates. Since crime mapping technology has helped law enforcement find patterns of criminal behavior in order to reduce crime, correctional systems can build on law enforcement’s approach to data analysis and crime prevention and control. Utilizing evidence-based management practices and visual displays of prison disorder and crime, FDC will:

- Promote the initiatives of the federal government such as The Prison Rape Elimination Act (PREA) by reducing sexual offenses in prison.
- Reduce recidivism rates, future sexual assaults and victimization of Florida’s citizens.

- Promote, analyze and empirically validate the Governor and President's faith based initiatives.
- Lower prison crime through environmental design.
- Incorporate key aspects of community policing into a correctional setting.

Implications for Knowledge and Practice:

The potential implications for correctional knowledge and practice are profound. Once tested and validated, COTAS will be used by facility, regional and statewide administrators to manage inmates, staff and resources by aligning the Agency's mission, goals and objectives into a effective strategic and operational plan.

There has been very little rigorous academic research into the effects of crime mapping on criminological outcomes. Opportunities for the detailed analysis of social behavior have been made possible by the increased amount of digital information. Using spatial analysis, policy makers can reallocate resources where they are most needed. Analysis will also be possible on the correlates of prison rape, recently made a priority by the federal government. The Florida Department of Corrections is in a unique position to empirically test the outcome of implementing crime mapping technology. With the massive amount of information gathered, even small changes in disorder will be detected.

Van & Garson (2001) identified twenty functions that can be used in crime mapping. Some of these functions are directly relevant to increasing officer, inmate and community safety for correctional managers. *Pin-mapping* can represent the mean location of similar misconduct incidents, such as prison rapes. This will enable prison administrators to allocate resources to that area and perhaps make environmental changes that reduce the likelihood of future victimization.

Hot-spot mapping uses spatial clustering methods to locate areas of concern and correlate the variables associated with the misconduct. Comparing hot-spots between prisons can provide insight into the structural and environmental influences of prison misconduct.

While the number of dots on a crime map can show density, overlaying dots on the same location can obscure the true density. *Density mapping*, a type of contour mapping, can link points of approximately equal density and by using a color gradient can visual display the true density of any area in relation to prison misconduct. Darker colors can alert prison officials of safety issues quickly.

Briefing maps combine the density mapping with GIS overlays will provide correctional managers with executive summaries of the entire prison system, or a single correctional facility.

Looking for patterns within the data can be burdensome for non statisticians. The *pattern detection* feature of GIS can detect patterns of incidents and alert administrators. Using GIS technology prison administrators will be able to detect if one facility is awarding gain time differently than others or generating disciplinary violations at a greater rate than comparable facilities. This will enable managers to implement appropriate training for staff.

Using *time-series mapping*, prison managers will be able to see how incidents within the prison are changing over time. With animated maps it will be possible to detect the migration of gang activity across the state as inmates are moved between facilities. Utilizing this mapping technique, prison level administrators will be able to anticipate and prepare for potential disturbances that they may encounter upon reception of multiple members of security threat groups.

A particular type of disturbance may be associated with proximity to areas of interest. It is possible that more prison assaults happen in the dining hall due to multiple offenders being crowded into a small area. *Proximity mapping* will alert prison administrators to these problems, enabling them to reallocate officers and increase safety.

Using spatial analysis to map *resource allocation* can help administrators to manage officer workload more efficiently. Managers will be able to visually assess the distribution of staff and the potential unbalanced inmate to officer ratios, thus increasing officer and inmate safety and lowering the risk of escapes.

After implementation of GIS based mapping technology for all correctional facilities, it will eventually be integrated for use by probation officers. By *integrating interagency data,* officers will be able to quickly detect whether an inmate's potential residence upon release is near a school or day care by integrating information collected by other state agencies.

The systemic approach to information management will enable correctional professionals to address gaps in correctional processes across agency functions. Using spatial analysis, policy makers can reallocate resources where they are most needed. Successful implementation in the prison setting will prepare FDC to implement COTAS into community supervision.

By identifying a limited number of measures and their potential interactions, states without the resources and means to collect a surfeit of data, can focus instead on those significant measures indicative of inmate disruption. This will enable FDC and other states to ensure officer, inmate and community safety in a more efficient and effective manner. For states with elaborate data systems already in place, this project will help them develop the methodology to replicate the results. Of particular interests to scholars and practitioners will be the verification of universal predictors in prison disorder. COTAS will be a model for other correctional systems.

The potential implications for correctional knowledge and practice are profound. Once developed, tested, piloted, and implemented, COTAS will be used daily by facility, regional and statewide administrators to manage inmates, staff and resources to complete its mission. A unified management system for corrections will revolutionize the field of correctional management and be a model for other correctional agencies.

Dissemination Strategy:

The research team will present at national and international conferences and will prepare an executive summary and final report on the efficacy of COTAS for the National Institute of Justice and submit articles regarding this research to criminal justice publications and peer reviewed journals. The software design will be disseminated to NIJ, and correctional professionals in order to facilitate the development of more advanced mapping technologies.

There are at least three planned conferences, two practitioner oriented and one academic in nature. The conference for the Academy of Criminal Justice Sciences in 2007 will be used to have outside academic personnel review and audit the results and theoretical implications of preliminary research findings. The NIJ Evaluation and Research Conference in 2007 will provide the FDC the ability to submit the significant findings of our research to the conference attendees. The NIJ Mapping Conference in 2007 will provide the FDC the ability to update other law enforcement agencies on the progress and significant findings of our project.

FDC will assist OJP in fulfilling its responsibilities under the Government Performance and Results Act (GPRA) by providing all data associated with the COTAS evaluation and implementation. A final report will provide the project design, data analysis results, and methods. Financial reports will be disseminated quarterly and as required by NIJ. FDC will also submit progress reports semi-annually as well as a final progress report at the end of the funding period.

Description of Estimated Costs:

To date, the Department has expended approximately $300,000 toward the development of COTAS. The Department has developed a proto-type system to display information and has begun the groundwork for the advanced interactive graphical display of the statistically significant indicators of prison disruption (see appendix for a mock up of the display). The Department is requesting funding to expand its ongoing research, development and implementation of COTAS. This phase involves the completion of data validation, the refinement of the graphical representations of data, and further development and implementation of COTAS. NIJ funding is requested for project needs starting in October 2006. The detailed budget with accompanying narrative is attached. A brief overview is provided below:

COTAS Budget Summary

Budget Category	Federal	Match	Total
A. Personnel	$0	$128,335	$128,335
B. Fringe Benefits	0	44,657	44,657
C. Travel	12,900	0	12,900
D. Equipment	132,000	0	132,000
E. Supplies	0	1,250	1,250
F. Construction	0	0	0
G. Consultants/Contracts	347,650	0	347,650
H. Other	0	0	0
Total Direct Costs	**$492,550**	**$174,242**	**$666,792**
I. Indirect Costs*	7,450	0	7,450
TOTAL PROJECT COSTS	**$500,000**	**$174,242**	**$674,242**

Staffing Plan:

Principal Researcher: **Dr. Laura E. Bedard** serves as Deputy Secretary of the Florida Department of Corrections. Dr. Bedard is a well-rounded internationally known corrections professional, educator, administrator and researcher. Dr. Bedard received her Ph.D. in 1998 from the Florida State University School of Social Work. She has an extensive resume including a wide assortment of publications. Her research and publications include articles on Hispanic youth gangs, Anxiety, Corrections Mental Health, Women in Prison, Treatment and Counseling, and Criminal Delinquent Behavior and Abuse. *Internationally,* Dr. Bedard directed the Czech Republic Study Abroad Program for Florida State University, coordinating studies on Criminal Justice in Emerging Democracies. She also has researched incarceration rates in Hungary after the fall of Communism and Attitudes of Czech Police Officers. She has held prominent national committee memberships and leadership roles, including National President of the American Criminal Justice Association (ACA) (1997-1999) and Chairperson of the

ACA Substance Abuse Committee. She has been recognized by many professional organizations and has received numerous awards for her work.

Principal technology manager is John Agliato, M.S., Chief of the Bureau of Systems Development. Mr. Agliato worked in clinical therapeutic environments with terminally ill children and participated in numerous studies. He collaborated in the statistical analysis of subjective expert-driven decision-making and the prediction of clinical treatments of childhood diseases and the choices of health management alternatives for health care providers and consumers. He has three Masters Degrees and has 20 years experience in IT. **Principal operations manager is S. Fred Roesel**, Chief of the Bureau of Classification and Central Records. Mr. Roesel has a bachelors in Criminal Justice from University of Central Florida and a masters in Education from the University of South Florida. Mr. Roesel has over 27 years of correctional experience and managed numerous automation projects. He has collaborated with national and state-wide initiatives to enhance the safety of the Florida correctional system. As project manager, Mr. Roesel has managed and coordinated numerous cutting-edge information technology and systems based projects involving system-wide applications. Mr. Roesel has also contracted with several states to enhance and develop safety strategies through systems analysis and he has also worked with the National Institute of Corrections and other private organizations to improve correctional processes and practices. **The principal research manager is David Ensley**, Chief of the Bureau of Research and Data Analysis. Mr. Ensley has a Master's Degree in statistics from Florida State University and over 10 of years of data analysis experience with the State of Florida. Other personnel include: Ms. (b)(6), Ph.D. candidate, Florida State University, College of Criminology and Criminal Justice; Ken Fleming, BA in Business Administration from Florida Agricultural and Mechanical University and 20 years of corrections, planning, logistics, and operations. More details including resumes and vitas are included in the attachment.

Timeline:

Please see attachment for a detailed timeline with two proposed alternatives. After the analysis of the data and acknowledgement of the number of variables requiring a graphical display, FDC will determine the most effective and efficient means to continue. This phase will either constitute buying the enhanced graphical overlay from an outside vendor or building the overlay using internal staff and resources. The entire project proposal will require three years to complete. Funding is requested from NIJ for the second phase. A brief project timeline is as follows:

Phase I & II

January 2005 – September 2007	Process Evaluation and System Design
March 2005 – September 2007	Data Mining, Compilation and Analysis
September 2005	Deliverables (Design Architecture, Proof Data Set)
October 2005 – April 2006	Develop COTAS Phase II Application
January 2006 – April 2006	Data Synthesis, Modeling & Forecasting
September 2006	Deliverables (COTAS Application, Critical Indicators, Graphical Displays)

Phase III

July 2006	Install COTAS server
August 2006 – June 2007	Facility Information to GIS Interface

August 2006 – May 2007	Develop COTAS Phase III Application
June 2007	Deliverables (GIS Interface, GIS Intensity Indicators, Final Report)

Florida Department of Corrections

Project Narrative

2012-91155-FL-IJ

June 14, 2012

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Florida Department of Corrections
Project Narrative
2012-91155-FL-IJ
June, 14, 2012

1. COTAS Background

The Florida Department of Corrections was awarded a grant by the National Institute of Justice in September, 2006. The grant proposal was for the development of Correctional Operations Trend Analysis System (COTAS), a software to create a correctional 'crime mapping' and information management system to monitor cross functionally operations that can be quickly viewed by all levels of correctional management. It would be used to identify trends, patterns, and areas of concerns within specific individual institutions and statewide.

The goals and objectives were defined as follows:

- Goal 1: To develop a systems approach to disorder analysis that will enhance long term safety and security. The review of this data would reduce officer and inmate injuries.
- Goal 2: Integrate the use of COTAS into management decision making and insure inmates are managed efficiently, effectively and safely. The intended objectives would be a reduction number in positive drug tests and increase the corresponding ratio between inmate assignments and assessed need.
- Goal 3: Use COTAS to review operational indicators of training needs to maintain and increase professionalism of staff. This would provide analytical indicators of staff with an anticipated reduction in staff turnover. It would also address staff training needs.

2. History of grant accomplishments to date

1999: COTAS became a concept evolving into a two level model:

- Determine which inmates are most likely to be disruptive.
- Determine facility characteristics that are predictive of disruption.

At that time, the agency was unable to obtain the resources or technology to accomplish this project. It continued to evolve as a concept until grant funding became available.

September, 2006: Department of Corrections was awarded a grant from NIJ to develop the COTAS application. Hardware procurement and proof of concept were accomplished during the first year.

October, 2007: Contract data warehouse experts were hired to begin the development of the COTAS application.

April, 2008: Initial rollout of COTAS to test group.

June, 2008: Production COTAS rollout to prison administrators.

October, 2008: Additional grant funds were obtained and the application has since been significantly enhanced based on input from users.

October, 2009: Additional grant funds were awarded to begin the final phase of the project. This includes: data validation, documentation and dissemination.

October, 2010: The data validation of COTAS was completed. The documentation and dissemination package was created.

3. *Application Development*

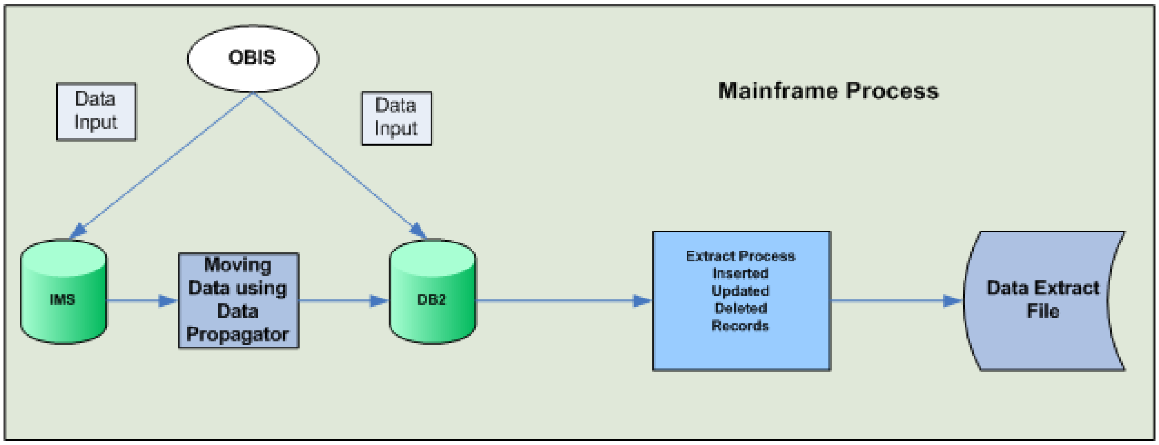

OBIS
Data Input
Data Input
Mainframe Process
IMS
Moving Data using Data Propagator
DB2
Extract Process Inserted Updated Deleted Records
Data Extract File

Figure 1

- The Offender Based Information System (OBIS) data, originally stored in an IMS database, has been moved to a DB2 database using Data Propagator. (See Figure 1.)

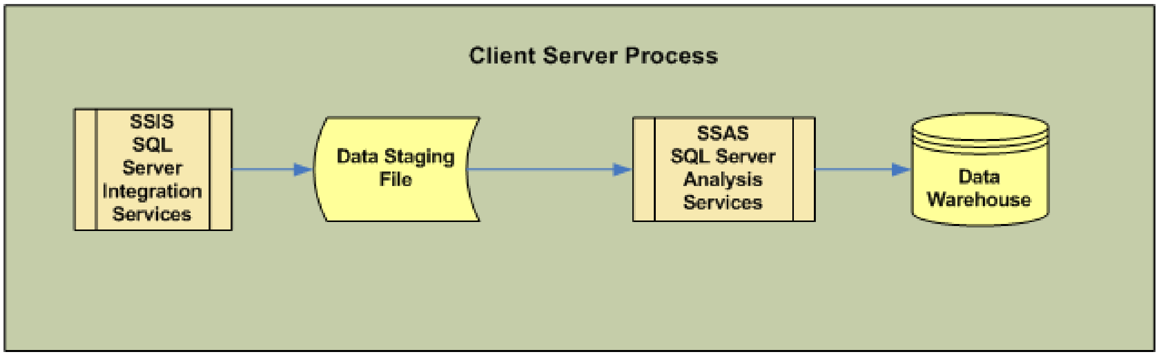

Client Server Process
SSIS SQL Server Integration Services
Data Staging File
SSAS SQL Server Analysis Services
Data Warehouse

Figure 2

- Using SSIS the data is pulled in via files extracted from the mainframe.

- This data is then cleansed and a historical snapshot is taken and placed into the historical data-warehouse tables.

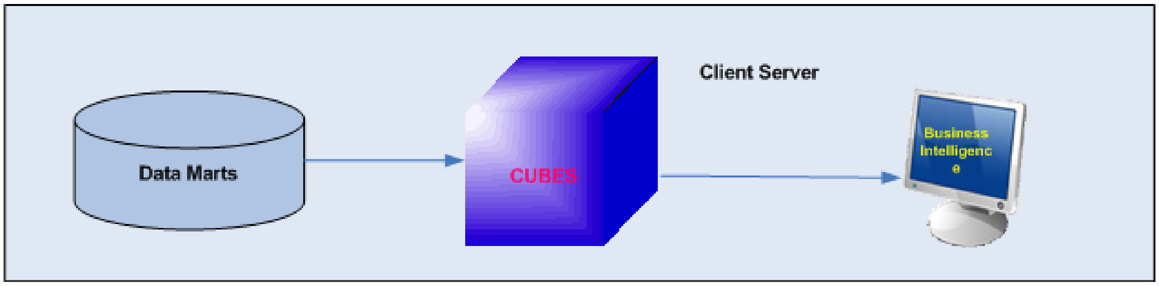
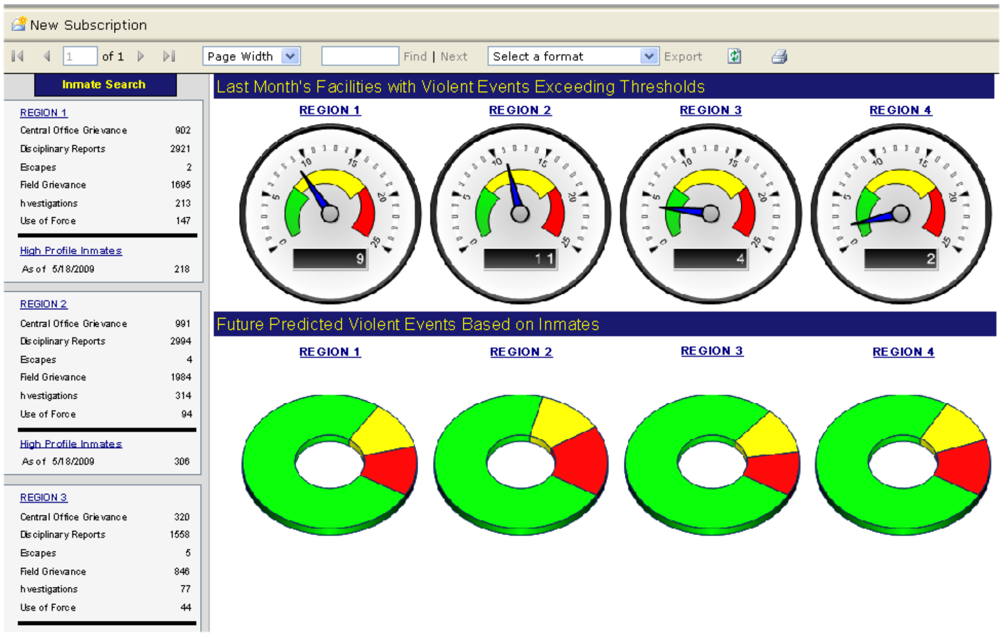


Figure 3

- Once this is complete an OLAP cube on top of the tables is processed to allow pre-aggregation of facility events.
- This OLAP Cube is now used for the reporting services reports designed on top utilizing the Dundas charting controls. In conjunction with this a data-mining model has been trained on offender information and a monthly offender snapshot is fed into this data model and predictive data is output to the database which is in turn used by predictor reports.
- The Business Intelligence (BI) component presents 24-hour latency data. All event reports show a rolling 30 day event list and counts.

4. *Screenshots from the application*



REGION 1	
Central Office Grievance	902
Disciplinary Reports	2921
Escapes	2
Field Grievance	1695
Investigations	213
Use of Force	147
High Profile Inmates	
As of 5/18/2009	218

REGION 2	
Central Office Grievance	991
Disciplinary Reports	2994
Escapes	4
Field Grievance	1984
Investigations	314
Use of Force	94
High Profile Inmates	
As of 5/18/2009	306

REGION 3	
Central Office Grievance	320
Disciplinary Reports	1558
Escapes	5
Field Grievance	846
Investigations	77
Use of Force	44

Figure 4

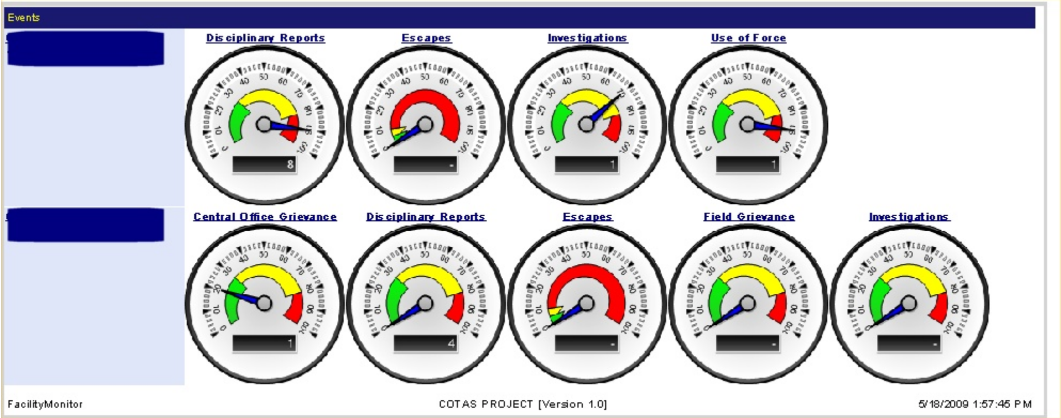
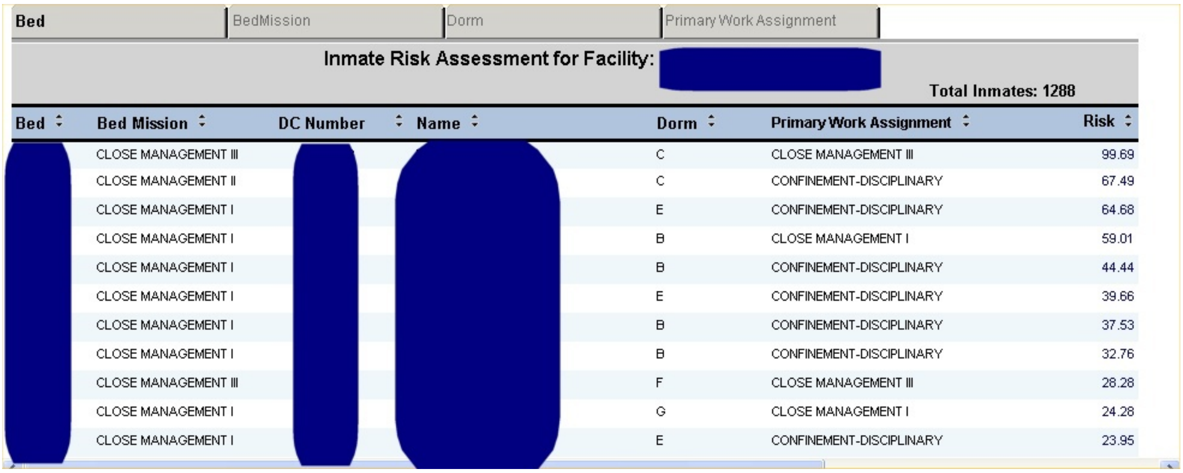


Figure 5



Inmate Risk Assessment for Facility: [redacted]

Total Inmates: 1288

Bed	Bed Mission	DC Number	Name	Dorm	Primary Work Assignment	Risk
[redacted]	CLOSE MANAGEMENT III	[redacted]	[redacted]	C	CLOSE MANAGEMENT III	99.69
[redacted]	CLOSE MANAGEMENT II	[redacted]	[redacted]	C	CONFINEMENT-DISCIPLINARY	67.49
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	E	CONFINEMENT-DISCIPLINARY	64.68
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	B	CLOSE MANAGEMENT I	59.01
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	B	CONFINEMENT-DISCIPLINARY	44.44
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	E	CONFINEMENT-DISCIPLINARY	39.66
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	B	CONFINEMENT-DISCIPLINARY	37.53
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	B	CONFINEMENT-DISCIPLINARY	32.76
[redacted]	CLOSE MANAGEMENT III	[redacted]	[redacted]	F	CLOSE MANAGEMENT III	28.28
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	G	CLOSE MANAGEMENT I	24.28
[redacted]	CLOSE MANAGEMENT I	[redacted]	[redacted]	E	CONFINEMENT-DISCIPLINARY	23.95

Figure 6

5. *Research and Data methods used to determine viable predictors*

Goal: Use only predictors that are well-defined, easily understood by users, and that significantly predict disruptive events.

- **Construct SAS data set:**
  - Five years monthly snapshots of inmate, facility and staff characteristics
  - Create indexes of violent and nonviolent disruption.
  - Create inmate level potential predictors from literature/leadership input.
  - Create facility level potential predictors from literature/leadership input.
  - Divide facilities into categories based on leadership input.
  - Take 5% random sample to make model estimating routines run efficiently.
- **Develop inmate level model**:
  - Use SAS PROC GENMOD to determine best inmate predictors of next month's disruption, by facility category.
  - Check multi-co-linearity to remove duplicative predictors.

- **Develop facility level model, including staff composition:** With individual predicted disruption controlled, use GENMOD to determine facility level factors predicting disruption, by facility category.
- Continued Validation: Periodic Re-Validation of Models and testing new proposed measures will be done.

6. COTAS Audience

- Corrections Administration Executive Staff
- Institutional Administration Executive Staff
- Executive Staff at the facilities
    - Warden
    - Assistant Wardens
    - Colonel
    - Major
    - Classification Supervisor
- Regional Administrators

7. Predictors completed to date

- *Events:*

    - Central Office Grievances (non-violent)
    - Disciplinary Reports (non-violent)
    - Disciplinary Reports (violent)
    - Escapes (non-violent)
    - Escapes (violent)
    - Field Grievances (non-violent)
    - Investigations (non-violent)
    - Investigations (violent)
    - Use of force (violent)

- *Predictors:*

    - Bed Category
    - Prior Close Management
    - Prior Violent Events
    - Prior Non-violent Events
    - Race
    - Gender
    - Failed Drug Test History
    - Number of gang members in an institution
    - Number of gangs in an institution
    - Housing levels
    - Staff Vacancies

- *Reporting:*

- Number of Gangs
  - Statewide
  - Region
  - Facility
- Number of Gang Members
  - Statewide
  - Region
  - Facility
- Average Gang Risk Factor
- PREA
- Individual Inmate Report

8. Training

Trainers selected from the ranks of Institutions Security Operations will provide procedural documentation on the agency's use of COTAS. The training should provide the staff assistance in using COTAS in day to day decision making regarding the management of their institutions.

A user manual has been provided to all COTAS users.

9. Application Implementation

A Wardens' Focus Group was created and used as the initial beta testing site. During the development of the application, this group was consulted periodically to participate in the selection of indicators and testing their validity. When the application was ready for beta testing, the Focus Group used the application for about three months. Their mission was:

1) Define the security levels of the application and the user group for each security level.
2) Recommend additional indicators.
3) Point out inconsistencies in data.
4) Determine ease of use.
5) Complete a list of questions specific to the application. For example:
   a) What did you find most useful?
   b) Do you feel this application will assist you in managing your operations?

When the beta group completed testing, the application was made available to all Wardens and Assistant Wardens. We have since expanded the availability to our Duty Wardens. Duty Wardens are responsible for the institutions during non-administrative hours. This group includes Wardens, Assistant Wardens, Colonels, Majors and Classification Supervisors. Surveys are done periodically and we continue development based on the feedback.

10. Presentations

To date, the following presentations have been made on the COTAS project, using grant funds:

- November, 2007: NIJ Technology Workgroup, Washington, D.C.
- March, 2008: NIJ Applied Technologies Conference, Point Clear, AL
- July, 2009: NIJ Conference, Washington, D.C.
- June 2011: NIJ Conference, Arlington, VA
- August 2011: NIJ Workshop, Washington, D.C.

11. Current Request for Additional Grant Funding

The data validation that was completed last year listed twenty-one recommendations for COTAS. Some of the recommendations have been addressed and we are still in the process of addressing the remaining recommendations. We are requesting additional grant funds to be used to validate the twenty-one recommendations after all modification are made to COTAS.

12. Future Plans

- Additional predictors
- Internal pilot project following validation
- Dissemination of COTAS to other correctional agencies
- Final technical report and software

Budget Detail Worksheet

Purpose: The Budget Detail Worksheet may be used as a guide to assist you in the preparation of the budget and budget narrative. You may submit the budget and budget narrative using this form or in the format of your choice (plain sheets, your own form, or a variation of this form). However, all required information (including the budget narrative) must be provided. Any category of expense not applicable to your budget may be deleted.

A. Personnel--List each position by title and name of employee, if available. Show the annual salary rate and the percentage of time to be devoted to the project. Compensation paid for employees engaged in grant activities must be consistent with that paid for similar work within the applicant organization.

Name/Position	**Computation**	**Cost**
Laura Bedard, Deputy Secretary	(b)(4), (b)(6)	(b)(4), (b)(6)
Ken Fleming, Correctional Services Administrator		
John Agliato, Chief of Systems Development		
Frank Wood, Data Processing Manager		
Patrick Greene, Systems Programming Administrator		
David Ensley, Chief of Research and Data Analysis		
Dena French, Operations & Management Consultant Manager		
(b)(4), (b)(6) **Research Associate**		
Fred Roesel, Chief of Classification		
Evelyn Ploumis-Devick, Director Agency Leadership and Resource Development		
John Lewis, Operations & Management Consultant Manager		
William Maust, Correctional Services Administrator		
Paul Maurer, Assist. Data Center Director		
(b)(4), (b)(6) **Systems Programming Administrator**		
John Ross, Systems (b)(4), (b)(6)		
(b)(4), (b)(6) **, Systems Project Administrator**		
(b)(4), (b)(6) **Research Associate**		
	TOTAL	**$128,335**

B. Fringe Benefits--Fringe benefits should be based on actual known costs or an established formula. Fringe benefits are for the personnel listed category (A) and only for the percentage of time devoted to the project. Fringe benefits on overtime hours are limited to FICA, Workman's Compensation, and Unemployment Compensation.

Employer's FICA	79,590	15%	11,704
Retirement	91,561	15%	13,465
Uniform Allowance			
Health Insurance	132,520	15%	19,488
Workman's Compensation			

Unemployment Compensation

TOTAL	**$44,657**

Total Personnel & Fringe Benefits **$172,992**

C. Travel-- Itemize travel expenses of project personnel by purpose (e.g., staff to training, field interviews, advisory group meetings, etc. Show the basis of computation (e.g., six people 3-day training at $X airfare, $X lodging, $X subsistence). In training projects travel and meals for trainees should be listed separately. Show the number of trainees and unit cost involved. Identify the location of travel, if known. Indicate source of Travel Policies applied, Applicant or Federal Travel Regulations.

Purpose of Travel	**Location**	**Item**	**Computation**		**Cost**
Conference	*Baltimore , MD*	Airfare	$350.00	4	$1,400.00
Academy of Criminal Justice Sciences		Hotel	$450.00	4	$1,800.00
February-07 3 days		*Meals*	$65.00	4	$260.00
		Registration	$250.00	4	$1,000.00
Conference	Washington, DC	Airfare	$350.00	4	$1,400.00
NIJ Evaluation & Research Conference		Hotel	$480.00	4	$1,920.00
July-07 3 days		*Meals*	$65.00	4	$260.00
		Registration	$250.00	4	$1,000.00
Conference	TBD	Airfare	$350.00	4	$1,400.00
NIJ Mapping Conference		Hotel	$300.00	4	$1,200.00
September - 07 3 days		*Meals*	$65.00	4	$260.00
		Registration	$250.00	4	$1,000.00
				TOTAL	**$12,900.00**

D. Equipment-- List non-expendable items that are to be purchased. (Note: Organization's own capitalization policy for classification of equipment should be used. Expendable items should be included in the "Supplies" category. Applicants should analyze the cost benefits of purchasing versus leasing equipment, especially high cost items and those subject to rapid technical advances. Rented or leased equipment costs should be listed in the "Contractual" category. Explain how the equipment is necessary for the success of the project. Attach a narrative describing the procurement method to be used.

Item	**Computation**		**Cost**
Data Warehouse/Analysis Server	$35,000.00	1	$35,000.00
GIS/Application hosting server	$35,000.00	1	$35,000.00
Disk, rack storage, electrical for servers	$15,000.00	1	$15,000.00
SQL Server 2000 software license	$47,000.00	1	$47,000.00

		TOTAL	**$132,000.00**

E.-Supplies--List items by type (office supplies, postage, training materials, copying paper, and other expendable items such as books, hand held tape recorders) and show the basis for computation. Generally, supplies include any materials that are expendable or consumed during the course of the project.

Supply Items	**Computation**			**Cost**
Training Materials	$500.00	1		$500.00
Office Supplies	$500.00	1		$500.00
Copy Paper	$250.00	1		$250.00
			TOTAL	**$1,250.00**

F. Construction-- As a rule, construction costs are not allowable. In some cases, minor repairs or renovations may be allowable. Consult with the program office before budgeting funds in this category.

Purpose	**Description of Work**		**Cost**
			$0.00
			$0.00
			$0.00
		TOTAL	**$0.00**

G. Consultants/Contracts-- Indicate whether applicant's formal, written Procurement Policy or the Federal Acquisitions

Consultant Fee: For each consultant enter the name, if known, service to be provided, hourly or daily fee (8-hour day), and estimated time on the project. Consultant fees in excess of $450 per day require additional justification and prior approval from OJP.

Name of Consultant	**Service Provided**	**Computation**		**Cost**
			Subtotal	$0

Consultant Expenses: List all expenses to be paid from the grant to the individual consultant in addition to their fees (i.e., travel, meals, lodging, etc.)

Item	**Location**	**Computation**		**Cost**
		$0.00	1	$0.00
		$0.00	1	$0.00

Subtotal	$0

Contracts: Provide a description of the product or services to be procured by contract and an estimate of the cost. Applicants are encouraged to promote free and open competition in awarding contracts. A separate justification must be provided for sole source contracts in excess of $100,000.

Item		Cost
Programmer	4090 programming hrs./$85 an hr.	$347,650

DC's development work routinely uses Staff Augmentation resources competitively procured by FL Dept of Management Services in their State Term Contract for state agency use. Contractor rate represents a recent increase with our State Term contract.

CONSULTANTS/ CONTRACTS TOTAL	**$347,650**

H. Other Costs-- List items (e.g., rent, reproduction, telephone, janitorial or security services, and investigative or confidential funds) by major type and the basis of the computation. For example, provide the square footage and the cost per square foot rent, and provide a monthly rental cost and how many months to rent.

Description	Computation			Cost
	$0.00	1		$0.00
	$0.00	1		$0.00
			TOTAL	**$0.00**

I. Indirect Cost--Indirect costs are allowed only if the applicant has Federally approved indirect cost rate. A copy of the rate approval, (a fully executed, negotiated agreement), must be attached. If the applicant does not have an approved rate, one can be requested by contacting the applicant's cognizant Federal agency, which will review all documentation and approve a rate for the applicant organization, or if the applicant's accounting system permits, costs may be allocated in the direct costs categories.

Description	Computation		Cost
	$0.00	1%	$7,450.00

TOTAL	**$7,450.00**

Budget Summary--When you have completed the budget worksheet, transfer the totals for each category to the spaces below. Compute the total costs and the total project costs. Indicate the amount of Federal requested and the amount of non-Federal funds that will support the project.

Budget Category	Federal	Match	Total
A. Personnel		128,335	128,335
B. Fringe Benefits		44,657	44,657
C. Travel	12,900		12,900
D. Equipment	132,000		132,000
E. Supplies		1,250	1,250
F. Construction			
G. Consultants/Contracts	347,650		347,650
H. Other			
Total Direct Costs	**$492,550**	**$174,242**	**$666,792**
I. Indirect Costs*	7,450		7,450
TOTAL PROJECT COSTS	**$500,000**	**$174,242**	**$674,242**

*Represents approximately 1% of total project costs.

NOTE: If a Non-Federal amount is entered, make sure those items for which they will be used must be incorporated into your overall budget. Indicate clearly throughout you budget narrative and detail worksheet for which items these funds will be used.

Budget Narrative

A. Personnel:

The Department is providing nine staff members and contracted staff augmentation. These staff positions will be utilized for management, research, analysis, development, and implementation in this phase of the project. Staff will devote a percentage of their time to this project as follows:

B. Fringe:

Fringe Benefits are calculated based on total annual salary per Employee.

C. Travel:

The purpose of travel is to support our dissemination plan. This will allow us to present our findings and discuss processes. There are at least three planned conferences, two practitioner oriented and one academic in nature. The conference for the Academy of Criminal Justice Sciences in 2007 will be used to have outside academic personnel review and audit the results and theoretical implications of preliminary research findings. The NIJ Evaluation and Research Conference in 2007 will provide the FDOC the ability to submit the significant findings of our research to the conference attendees. The NIJ Mapping Conference in 2007 will provide the FDOC the ability to update other law enforcement agencies on the progress and significant findings of our project.

D. Equipment Descriptions:

Data Warehouse / Analysis Server

This server hardware will contain a licensed installation of SQL Server 2000 database as well as SQL 2000 Analysis Services to provide the Data Warehouse capabilities.

GIS / Application hosting server:

This server hardware will contain a licensed installation of AutoDesk GIS software, Microsoft SQL Reporting Services, and custom designed interfaces for graphical and tabular presentation of data to the user.

Disk, Rack storage, electrical for servers:

Additional server hard disks will be provided for data storage growth in both the Data Warehouse and GIS servers. One or more rack units with the appropriate electrical service will be provided to house the servers.

SQL Server 2000 software license:

A SQL Server 2000 server database software license will be used on the Data Warehouse and Analysis server.

E. Supply Item Descriptions:

Training Material:

These costs are made available to the project manager to meet all identified training needs relevant to the success of the project and additional training needs that may arise during project implementation. These funds will be utilized for the development of educational materials and curriculum specific to implementing the mapping prototype across correctional institutions and in the development of educational materials and curriculum specific to correctional managers on COTAS.

Office Supplies:

These costs are made available to project staff to meet dissemination and report writing needs. It will include photocopying of material, ink, pencils, etc. that will be needed during the course of the project.

Copy Paper:

These costs are made available to project staff to meet dissemination and training needs. It will include photocopying of training material, reports, and executive summaries that will be needed during the course of the project.

F. Construction:

There are no associated construction costs with this project.

G. Consultants/Contractors:

Consultants:

There are no associated consultants with this project.

Contractors:

Programmers Description

Contract Programmers acquired from the Staff Augmentation section of the Florida Department of Management Services' State Term Contract (STC) will primarily design and code ETL processes and custom interfaces, for graphical and tabular presentation of data to the user, using .NET and SQL Server Data Transformation Services. The STC was competitively procured for use by state agencies to be able to respond quickly and efficiently to changing needs in the highly volatile IT personnel area.

H. Other Costs:

There are no associated 'other costs' included in this budget request.

G. Indirect Costs:

The FDC has a Negotiated Agreement approving a fixed carry forward rate of 24.1%. Please see attached document below from the U.S. Department of Justice. In order to ensure the implementation of this grant, FDC is asking for 1% in indirect costs.

In-Kind Items:

As discussed the following have been identified as possible in-kind expenses that may, upon approval, be funded by the Department.

1. Computer workstations and software licenses for each contract programmer – if workstations are needed and approved, Classification and Central Records will fund them.
   1.1. Licensed software for each workstation
      1.1.1. Windows XP Professional
      1.1.2. MS Office
      1.1.3. Visual Studio .NET with Visio for Enterprise Architects
2. FDC staff time will be contributed as in-kind donation. These costs are outlined in the budget.
3. AutoDesk software licenses (already purchased).
4. Staging servers are required to develop and release future product enhancements as well as on-going maintenance required throughout the product lifecycle. Staging servers may have slightly reduced operational requirements; however software licensing requirements will be the same as those required by the production environment. If additional equipment is needed as a result of work load caused by the project, Classification and Central Records will fund this.
   4.1. GIS / Application staging server with licensed installations of AutoDesk and SQL Server 2000
   4.2. ETL staging server with a licensed installation of SQL Server 2000.

Florida Department of Corrections
Budget Detail Worksheet
2012-91155-FL-IJ

Purpose: The Budget Detail Worksheet may be used as a guide to assist you in the preparation of the budget and budget narrative. You may submit the budget and budget narrative using this form or in the format of your choice (plain sheets, your own form, or a variation of this form). However, all required information (including the budget narrative) must be provided. Any category of expense not applicable to your budget may be deleted.

A. Personnel--List each position by title and name of employee, if available. Show the annual salary rate and the percentage of time to be devoted to the project. Compensation paid for employees engaged in grant activities must be consistent with that paid for similar work within the applicant organization.

Name/Position	Computation		Cost
		TOTAL	$0.00

B. Fringe Benefits--Fringe benefits should be based on actual known costs or an established formula. Fringe benefits are for the personnel listed category (A) and only for the percentage of time devoted to the project. Fringe benefits on overtime hours are limited to FICA, Workman's Compensation, and Unemployment Compensation.

Cost

Total Personnel & Fringe Benefits	**$0.00**

C. Travel-- Itemize travel expenses of project personnel by purpose (e.g., staff to training, field interviews, advisory group meetings, etc. Show the basis of computation (e.g., six people 3-day training at $X airfare, $X lodging, $X subsistence). In training projects travel and meals for trainees should be listed separately. Show the number of trainees and unit cost involved. Identify the location of travel, if known. Indicate source of Travel Policies applied, Applicant or Federal Travel Regulations.

Purpose of Travel	Location	Item		Computation		Cost
Presentation at Workshop/NIJ	TBD	Airfare	*	$431.50	3	$1,295.00
		Hotel	**	$225.00	9	$2,025.00
		Meals	***	$90.00	9	$810.00

*Round trip for one person
**Three nights hotel stay for one person
***Three days' meals for one person

TOTAL **$4,130.00**

D. Equipment-- List non-expendable items that are to be purchased. (Note: Organization's own capitalization policy for classification of equipment should be used. Expendable items should be included in the "Supplies" category. Applicants should analyze the cost benefits of purchasing versus leasing equipment, especially high cost items and those subject to rapid technical advances. Rented or leased equipment costs should be listed in the "Contractual" category. Explain how the equipment is necessary for the success of the project. Attach a narrative describing the procurement method to be used.

Item	Computation		Cost
	$0.00	0	$0.00
	$0.00	0	$0.00
	$0.00	0	$0.00
		TOTAL	**$0.00**

E. Supplies--List items by type (office supplies, postage, training materials, copying paper, and other expendable items such as books, hand held tape recorders) and show the basis for computation. Generally, supplies include any materials that are expendable or consumed during the course of the project.

Supply Items	Computation		Cost
		TOTAL	**$0.00**

F. Construction-- As a rule, construction costs are not allowable. In some cases, minor repairs or renovations may be allowable. Consult with the program office before budgeting funds in this category.

Purpose	Description of Work		Cost
			$0.00
			$0.00
			$0.00
		TOTAL	**$0.00**

G. Consultants/Contracts-- Indicate whether applicant's formal, written Procurement Policy or the Federal Acquisitions are followed.

Consultant Fee: For each consultant enter the name, if known, service to be provided, hourly or daily fee (8-hour day), and estimated time on the project. Consultant fees in excess of $450 per day require additional justification and prior approval from OJP.

Name of Consultant	Service Provided	Computation	Hours		Cost
*Unknown	Data Validation	$145.00	1,006.00		$145,870.00
				Subtotal	$145,870.00

*Agency's Procurement Policy will be followed. Hiring and selection of consultant will be completed upon receipt of the funds.

Consultant Expenses: List all expenses to be paid from the grant to the individual consultant in addition to their fees (i.e., travel, meals, lodging, etc.)

Item	Location	Computation	Cost

	$0.00	1	$0.00
	$0.00	1	$0.00
		Subtotal	$0.00

Contracts: Provide a description of the product or services to be procured by contract and an estimate of the cost. Applicants are encouraged to promote free and open competition in awarding contracts. A separate justification must be provided for sole source contracts in excess of $100,000.

Item		**Cost**
Contract 1		$0.00
	Subtotal	$0.00
	CONSULTANTS/ CONTRACTS TOTAL	**$145,870.00**

H. Other Costs-- List items (e.g., rent, reproduction, telephone, janitorial or security services, and investigative or confidential funds) by major type and the basis of the computation. For example, provide the square footage and the cost per square foot rent, and provide a monthly rental cost and how many months to rent.

Description	**Computation**			**Cost**
	$0.00	1		$0.00
	$0.00	1		$0.00
			TOTAL	**$0.00**

I. Indirect Cost--Indirect costs are allowed only if the applicant has Federally approved indirect cost rate. A copy of the rate approval, (a fully executed, negotiated agreement), must be attached. If the applicant does not have an approved rate, one can be requested by contacting the applicant's cognizant Federal agency, which will review all documentation and approve a rate for the applicant organization, or if the applicant's accounting system permits, costs may be allocated in the direct costs categories.

Description	**Computation**	**Cost**

$0.00	0%		$0.00
		TOTAL	**$0.00**

Budget Summary--When you have completed the budget worksheet, transfer the totals for each category to the spaces below. Compute the total costs and the total project costs. Indicate the amount of Federal requested and the amount of non-Federal funds that will support the project.

Budget Category	**Amount**
A. Personnel	$0.00
B. Fringe Benefits	$0.00
C. Travel	$4,130.00
D. Equipment	$0.00
E. Supplies	$0.00
F. Construction	$0.00
G. Consultants/Contracts	$145,870.00
H. Other	$0.00
Total Direct Costs	**$150,000.00**
I. Indirect Costs	$0.00
TOTAL PROJECT COSTS	**$150,000.00**
Federal Request	**$150,000.00**
Non-Federal Amount	**$0.00**

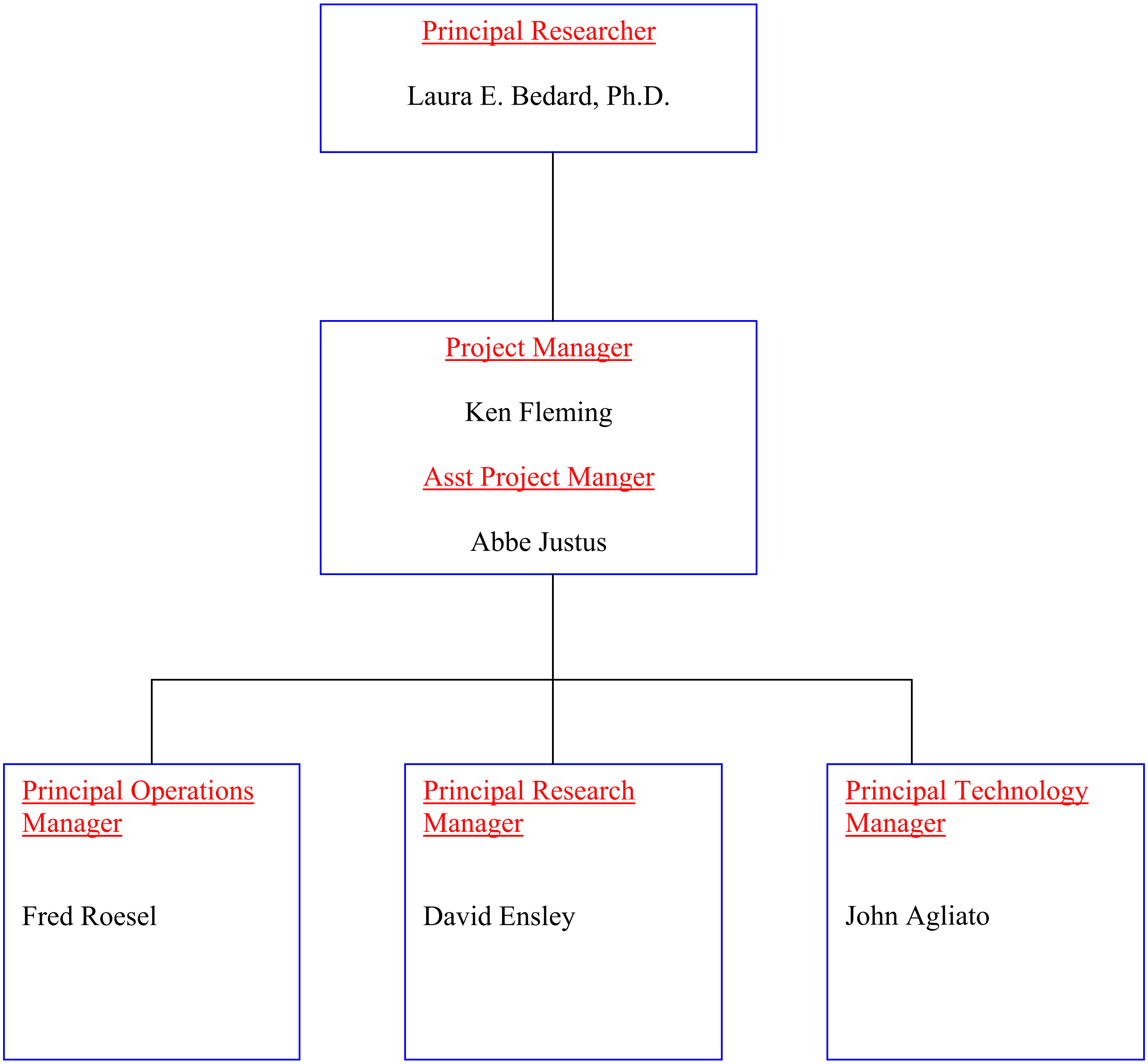
NOTE: If a Non-Federal amount is entered, make sure those items for which they will be used must be incorporated into your overall budget. Indicate clearly throughout you budget narrative and detail worksheet for which items these funds will be used.

Appendixes

Management Plan and Organization

Florida Department of Corrections

Corrections Operational Trend Analysis System (COTAS)



Principal Researcher

Laura E. Bedard, Ph.D.

Project Manager

Ken Fleming

Asst Project Manger

Abbe Justus

Principal Operations Manager

Fred Roesel

Principal Research Manager

David Ensley

Principal Technology Manager

John Agliato

Requirements on Projects with IT Components or Services: The Federal Government, State of Florida and the Department of Corrections each have policies and procedures designed to regulate and help ensure the success of projects with IT components or services. The COTAS project will likely involve and, therefore, must comply with the requirements of many of the regulatory or funding entities that govern the implementation of IT systems or services.

The Department has standards and procedures, as well as, a mandated Information Systems Development Methodology (ISDM) which provide guidelines for projects which develop custom software applications. These are updated regularly to comply with State guidelines, as well as IT best practices. The Office of Information Technology is re-fitting its regulatory base with ITIL language, as needed. A key tenet of ITIL's governance involves the prioritization, funding, risk mitigation and control of projects such as that proposed for COTAS.

The State also has an array of policies and procedures arising from IT Governance concepts with specific requirements regarding the procurement and implementation of IT projects. This F.A.C. Rule and other regulations are also founded or reflected in the ITIL.

The policies and procedures required by the Federal grantor also must be incorporated into the regulatory structure of the COTAS project regardless of the approach chosen by the Department to ensure that all requirements are met. The review of standards and the establishment of a project structure to satisfy each regulatory entity will be initiated prior to the initiation of the grant-funded project by the Project Management Section of the Office of Information Technology.

Planning Approach to Projects with IT Components or Services: Planning, including a range of activities from the traditional analysis of user requirements to the identification of and plans to mitigate risks, is essential to the success of any project, including those that may have IT components or services. The leadership of the Project includes the Deputy Secretary, the Director of the Agency Leadership & Resource Development, and the Bureau Chiefs of Classification, Research and Data Analysis and Systems Development. This level of attention illustrates the commitment of the Department to COTAS.

The extensive foundational work of the Department will continue over the next several months while this project proposal is being evaluated by NIJ. The system owner/users including the Office of Institutions, Research and Data Analysis and the Department's Planning Section will refine and formalize the earlier informal discovery process by releasing a Request for Information (RFI) to companies which have potential commercial off-the-shelf software for data warehousing, analytic processing and geographical information systems. In addition, these owner/users will work with the Office of Information Technology to develop a basic business intelligence prototype application as the next step in the empirical COTAS discovery process. The prototype is expected to be completed by the time of the award of the grant and will serve a tangible example of the tools proposed, as well as, the resolve of the Department to complete COTAS.

All of the parts of discovery process, discussions of benefits and “Build” or “Buy” options will be brought together in an initial high-level requirements analysis activity lead by the Department’s Planning Section. This will involve joint applications design sessions with users, research statisticians and IT professionals. Much of the information and many of the considerations for the Build or Buy decision are common between each option. Differences will be pointed out where they may exist.

Project Plan and Schedule: The Project Schedules presented below reflect two options, buy or build the enhanced interface development, designed to give the Department the maximum flexibility to achieve the most functional and cost effective solution possible. These schedules are presented as time-duration Microsoft Project Gantt charts that reflect the estimated length of time required for each task. These plans will be further refined during the initial planning activities and presented as a part of the Build or Buy documentation presented to Department management for their decision process.

Project Planning and Initial Analysis Timeline – contains details of the activities preparing for and managing the COTAS project as it proceeds. The various project plans will be reviewed and refined as an early step in this effort to ensure that they are up to date. This analytic effort will be lead by the initial primary owner/user of the COTAS application, the Planning Section. It will heavily involve staff from the Office of Institutions, Research and Data Analysis, and the Office of Information Technology, as well as, an analyst contractor provided by the Office of Information Technology. The work required of the statisticians of Research and Data Analysis is also reflected in this Plan.

This plan also includes the release by the Bureau of Procurement and Supply of a Request for Information (RFI) developed by the Planning Section, the Bureau of Research and Data Analysis, and the Bureau of Classification and Central Records. This formalizes the discovery and is important to ensure that the most cost effective option is chosen. It progresses through the documentation of requirements and culminates in documentation to facilitate a Build or Buy decision by executive management. This is the nominal process of evaluation of projects with IT components.

- Build Option Timeline – this detailed project schedule contains the tasks of the work involved in building a system according to the standards found in the Department’s Information Systems Development Methodology. The ISDM embodies a traditional approach to the development of custom applications software from analysis through implementation. The project management component for this plan is also reflected in the Project Planning and Initial Analysis Timeline, described above, to ensure the continuity of management from planning through build. The project schedule contained in this Plan and the concomitant estimates will be reviewed refined by the analysis provided by the Project Planning and Initial Analysis effort. If the Build Option is chosen, the requirements, estimates and project plans will be reviewed and refined once again at the beginning of this effort to ensure their accuracy.

- Buy Option Timeline – this is least detailed of the plans and as such is included in the Project Planning and Initial Analysis Timeline. This initial plan contains a high-level view of how the procurement and implementation of this option may be achieved. This, too, would also be refined by the analysis provided by the first steps in the Project Planning and Initial Analysis effort.

The current pilot release now in progress expanded this to display approximately 140 raw data elements without determination of statistical significance, testing or validation. While this begins to establish the significance of the expert judgment effect, it also indicates the potential volatility of the data set. This may be managed by modeling of the data from its source to its destination and by controlling the scope of the next release. In addition, the current plan is to develop a rudimentary dashboard to fit on top of this data to help filed managers to understand the COTAS concept.

The next significant change to CMRS as it transitions to the full COTAS concept is the development of a business intelligence prototype application. This will not deliver the full business intelligence solution that is proposed by COTAS but rather a simplified display based on Research data thresholds which will trigger a color coded display. This is planned for completion before the award of the grant and will assist in training and refinement of the COTAS concept.

Technical Approach and Methods: A single data warehouse and/or several data marts would be designed and implemented with a multidimensional schema to store data, selected as described above, from the following transactional data stores:

- OBIS (Offender Based Information System) – centralized mainframe hierarchical data store used to maintain and record offender/inmate records
- HRD (Human Resources Database) – centralized server based data store used to maintain and record Department staff records
- RMS (Roster Management System) –centralized server based data store used to maintain and record Security Staff post assignments within Department facilities
- FAST (Facility Access Secure Tracking) – centralized and distributed server based data stores to maintain and record the occurrence of inmate visitation and inmate volunteer activity
- IGLOGS – centralized server based data store used to maintain and record investigative data by the Department's Inspector Generals Office and inmate grievance data.
- MINS (Management Information Notes System) – centralized mainframe hierarchical data store used to maintain and record staff/offender incidents throughout the Department
- Inmate Bank Database – centralized relational mainframe data store used to maintain and record inmate financial data
- Cashless Canteen System – centralized server based data store used to maintain and record inmate purchases of items with the Canteens located at every major institution. The availability of this data must be determined during the initial analysis activities as the Cashless Canteen system has been outsourced/privatized.
- Inmate Telephone System – centralized server based data store used to maintain and record inmate telephone activity

- Inmate Gang Database – centralized server based data store used to maintain and record inmate/offender gang activity
- Use of Force Database – centralized server based data store used to maintain and record whenever a staff member uses force against an inmate or offender

Additionally, research statisticians will analyze the huge volumes of data available within the department's official data repositories, described above, to determine their predictive significance, as described in the Methods section. The most predictive data will also be made available for display by the COTAS application.

Build Option or Buy Option

The consideration of potential alternative solutions is a necessary part of the analysis and planning process of solutions with IT components. This often includes the evaluation of the procurement of commercial-off-the-shelf software, as well as internal builds. The Department is planning an evaluation of these alternatives this year.

Implementation of COTAS - Build Option

Software Design Methodology: If the "build" option is chosen for the COTAS release that is the subject of this proposal, developers and statisticians will model data from transactional systems to develop a data warehouse, which will be housed on server running Microsoft SQL Server 2000 database software. Systems Development will utilize DTS (Data Transformation Services), for loading the data from the various transactional databases into the data warehouse. SQL 2000 Analysis Services will be utilized to build the OLAP (on-line analytical processing) database cubes to aid in modeling and forecasting. The graphical interface for the COTAS application will be developed using MS Office Web Components, Visual Studio .NET and AutoDesk GIS software.

The Office of Information Technology Bureau of Systems Development will be taking a subset, as described above, of these data elements which will be evaluated for their predictability as indicators as identified by Research and Data Analysis. In addition, some expert judgment data elements will be used. The outcome of the statistical analysis, the analysis of requirements, modeling of the data and project planning will determine, finally, what statistical and expert judgment data is identified as high-gain KPI and included in this Release of the application.

Programs and processes will be designed and implemented to extract, transform and load the data from the entire transactional database stores listed above into the data marts/warehouse. The programs and processes will use a combination of mainframe extracts and server based database extracts to retrieve the data during low activity periods of the transactional data stores so the operational databases are not adversely affected.

The final release, a graphical user interface using AutoDesk mapping software and Microsoft .NET application development software, will be designed and implemented so users of the system can easily retrieve and view the data aggregated and also have the ability to drill down into the detail levels of the data in the data warehouse. The graphical user interface will allow users to view the data values stored in the multidimensional cubes in a tabular format with drill down capabilities. The graphical user interface will also allow users to view the data values stored in the data warehouse and multidimensional cubes on a statewide level using AutoDesk mapping software. The mapping interface to the application will indicate pre-determined thresholds of status indicators set by the user group and present the thresholds in a crime mapping fashion.

Technology Procurement and Project Management Requirements:

The Department of Corrections, in compliance with state law and industry best practices has an Information Systems Development Methodology, standards, procedures and project management requirements which must be followed. These will help to ensure the successful implementation of the product as specified. All changes to scope will be handled to ensure that the product is delivered on time and in budget or that proper change requests are executed. As an example of the Department's technical standards, the Project Plan/Schedule presented with this proposal was completed using a standard template modified to satisfy the expected and unique needs of this critical and potentially variable project. At a descriptive level, the development work involves the following:

- Document system requirements working with Research and Data Analysis and business experts.
- Model the schema of the data warehouse.
- Program the extract/transform/load (ETL) process to populate the data warehouse from the transactional databases on a daily basis.
- Design and maintain the multidimensional cubes of aggregated data values from the data warehouse fact tables and dimension tables
- Design and implement a graphical user interface which will allow users to view the data values stored in the multidimensional cubes in a tabular format as a drill down capability.
- Design and implement a graphical map-based user interface which will allow users to view the data values stored in the multidimensional cubes on a statewide level. This interface will use pre-determined thresholds set by the user group to switch on status indicators on the map.

Implementation of COTAS - Buy Option

The Office of Institutions Bureau of Classification has taken the lead over the years in the discovery process related to COTAS. One of the most innovative of their efforts working with the Bureau of Research and Data Analysis has involved preliminary informal attempts to discover the availability of commercial off-the-shelf software and data warehousing solutions. It is possible that multiple software and service companies have the necessary analytic and geographical user interface products available to fit onto the Department's existing data warehouses currently maintained by Research and Data Analysis. If this solution is feasible, it may reduce costs and the delivery time of the COTAS tool set to realize the obvious benefits more quickly and at less cost.

Project Risk Mitigation

The project team has identified the following typical risks which require mitigation in this project. Some risks which have already been mitigated by the project team are discussed as are the necessary plans to mitigate the remainder. This process is essential to ensure the successful completion of this vitally important project. These risks and mitigations apply to both the "Buy" and "Build" options.

Potential Risk	**Potential Impact to the Project of the Risk**	**Planned Activities to Mitigate the Risk**
Insufficient funds.	• Project may not be initiated or completed.	• Apply for grant funds, as done, herein. • Seek additional funds as needed.
Insufficient management or executive buy-in or involvement.	• Project may not be initiated or completed.	• Department managers and executives: o are already deeply involved in this project: ▪ the Deputy Secretary is the Principle Investigator, ▪ the Director of the Agency Leadership & Resource Development leads the grant team, ▪ the planning section is responsible for writing the grant and brining the project to completion, and ▪ other key managers are involved in the project. o have worked extensively on identifying key performance indicators (KPI), o have committed state staff resources in Research and Data Analysis, Classification and Information Technology o are anxious to use the products of the project in daily management.

Insufficient analysis may be conducted to determine the key performance indicators (KPI) and associated thresholds which are needed to ensure the highest level of usability of the product and, therefore, greatest return on investment.	• A significant amount of effort is spent on the product with little or no real business benefit.	• Use existing methodologies to conduct requirements analysis and subsequent tasks. • Document requirements and user acceptance of those requirements and subsequent tasks. • Conduct project management and quality check points throughout the project. • Initial planning and analysis including the consideration of Build or Buy Options will assist in clarification of KPI.
Attempting to address too many KPIs or too broad a scope for the graphical user interface (e.g. too many levels of drill-down or changing scope of drill-down).	• Missed deadlines and cost overruns. • Product does not satisfy changing user expectations.	• Define a subset of all KPIs identified as high-gain KPIs to ensure a successful project. • Select a subset of high-gain KPIs using statistical analysis. • Select a subset of high-gain KPIs using expert judgment previously gathered in JADs, in requirements analysis or in prior business solutions. • Clearly specify the initial project scope based on high-gain KPIs and the delivery of products in achievable timeframes. • Monitor project progress against planned scope. • Provide project updates to management team. • Initial planning and analysis including the consideration of Build or Buy Options will help refine or narrow KPI.
Inadequate or improper tools and technologies to implement a	• A solution which is not maintainable or	• Use Microsoft tools and technologies to capitalize

usable business intelligence (BI) solution.	will not integrate with back-end data sources.	on existing skill sets. • Augment existing skill sets with whitepapers and knowledge transfer from Microsoft. • Initial planning and analysis including the consideration of Build or Buy Options will help capitalize on well established tools.
Limited experience relating specifically to Data Warehousing architecture and construction of Business Intelligence solutions.	• Delays to schedule and timeline.	• Use Microsoft tools and technologies to capitalize on existing skill sets. • Augment existing skill sets with published whitepapers and knowledge transfer presentations from Microsoft. • Initial planning and analysis including the consideration of Build or Buy Options will help offset the lack of experience with on-line analytic processing systems.

Use of the System: It is expected that the system will be used in daily management team meetings where the map-based view will be projected on a screen. The team will look for indicator symbols that are color coded to indicate status the level of concern from nominal, through caution to alarm. If a caution or alarm status is found, the team will drill down through the map to tabular data for on-the-spot analysis and response. In addition, the management team will continue to receive and use ad hoc and routine reports provided by the Bureau of Research and Data Analysis in this same forum. This combination of visual display and data analysis is predicted to be particularly useful in daily operation in a rapidly changing and potentially dangerous environment such as that managed by the Department.

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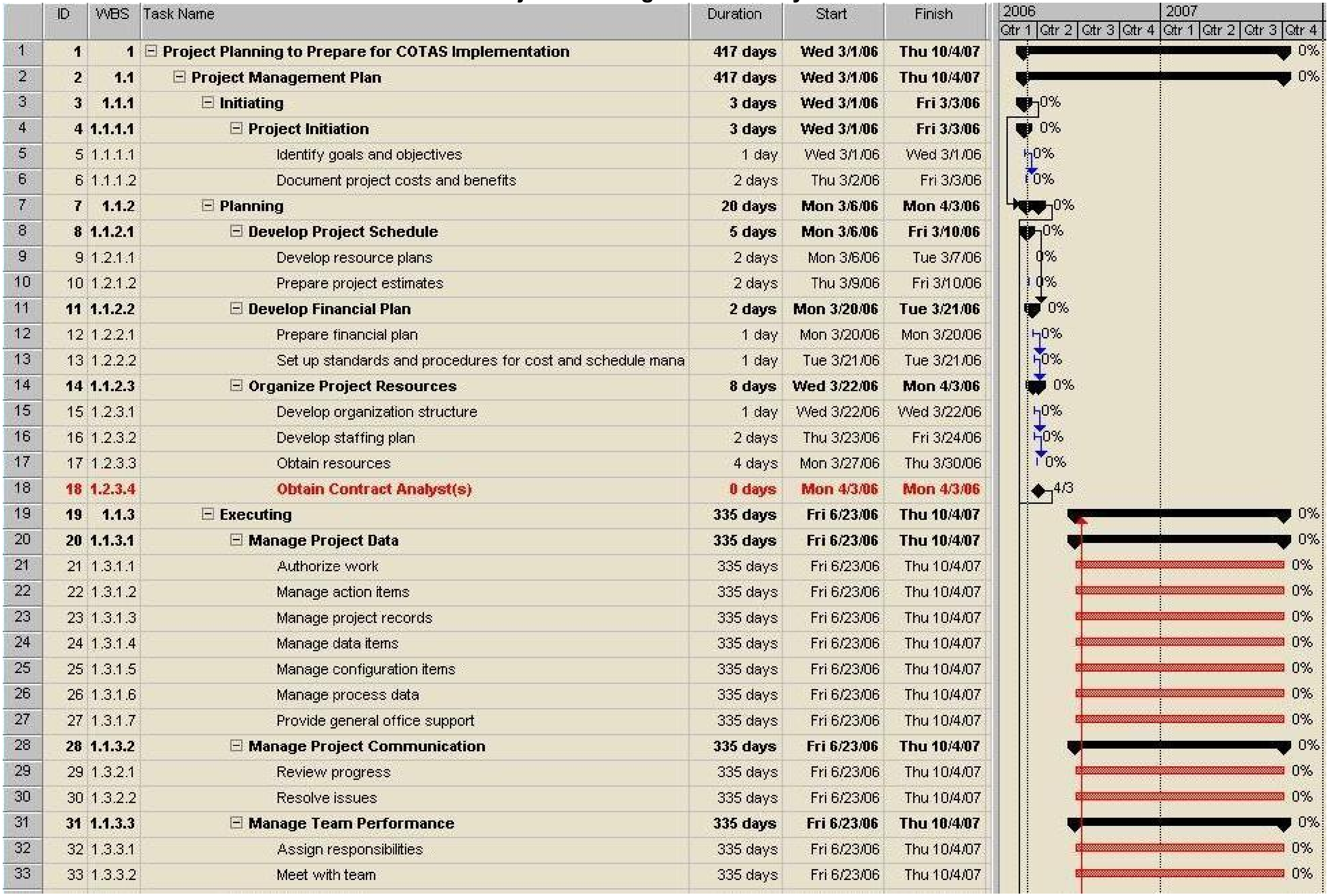
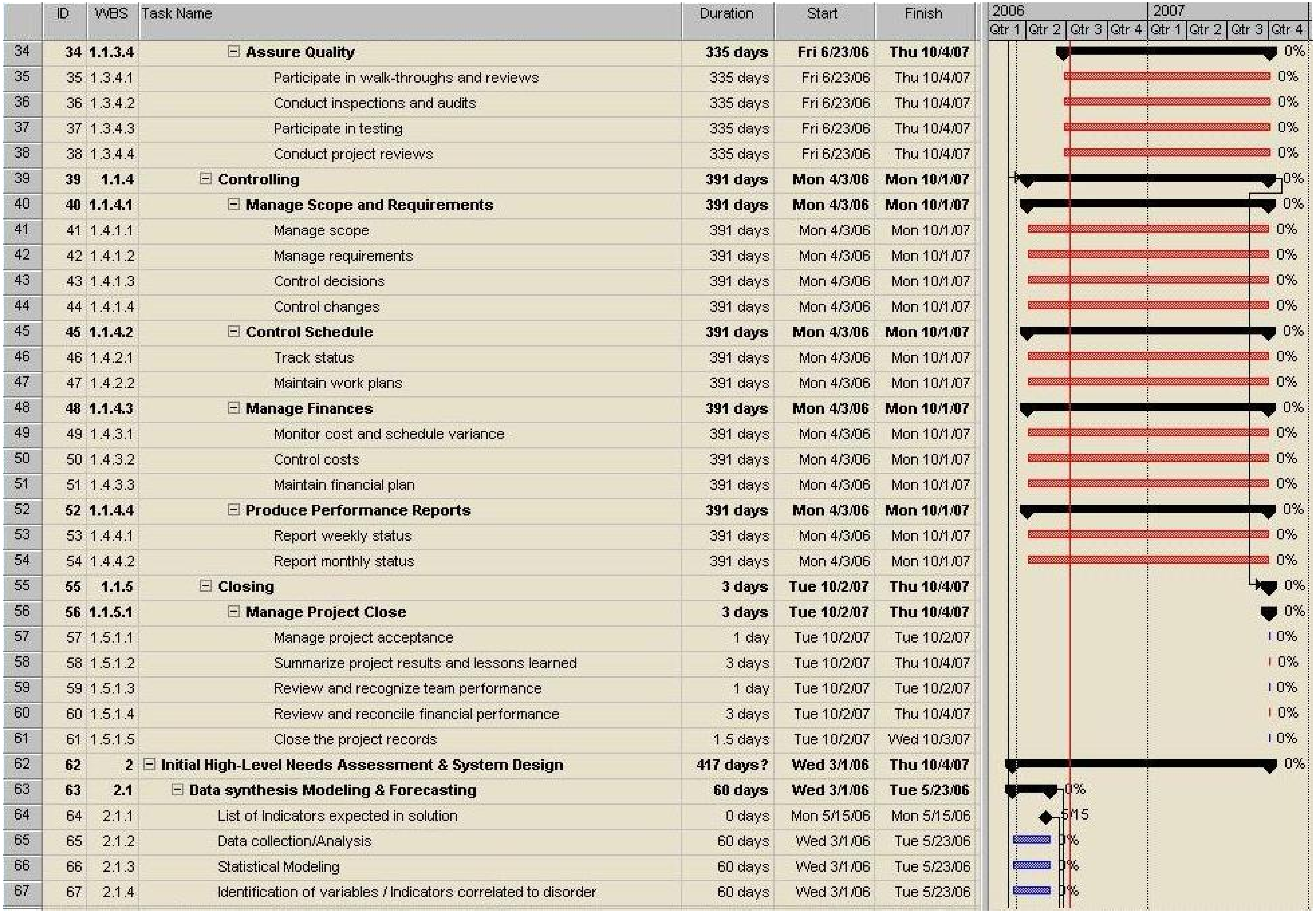
Other Materials

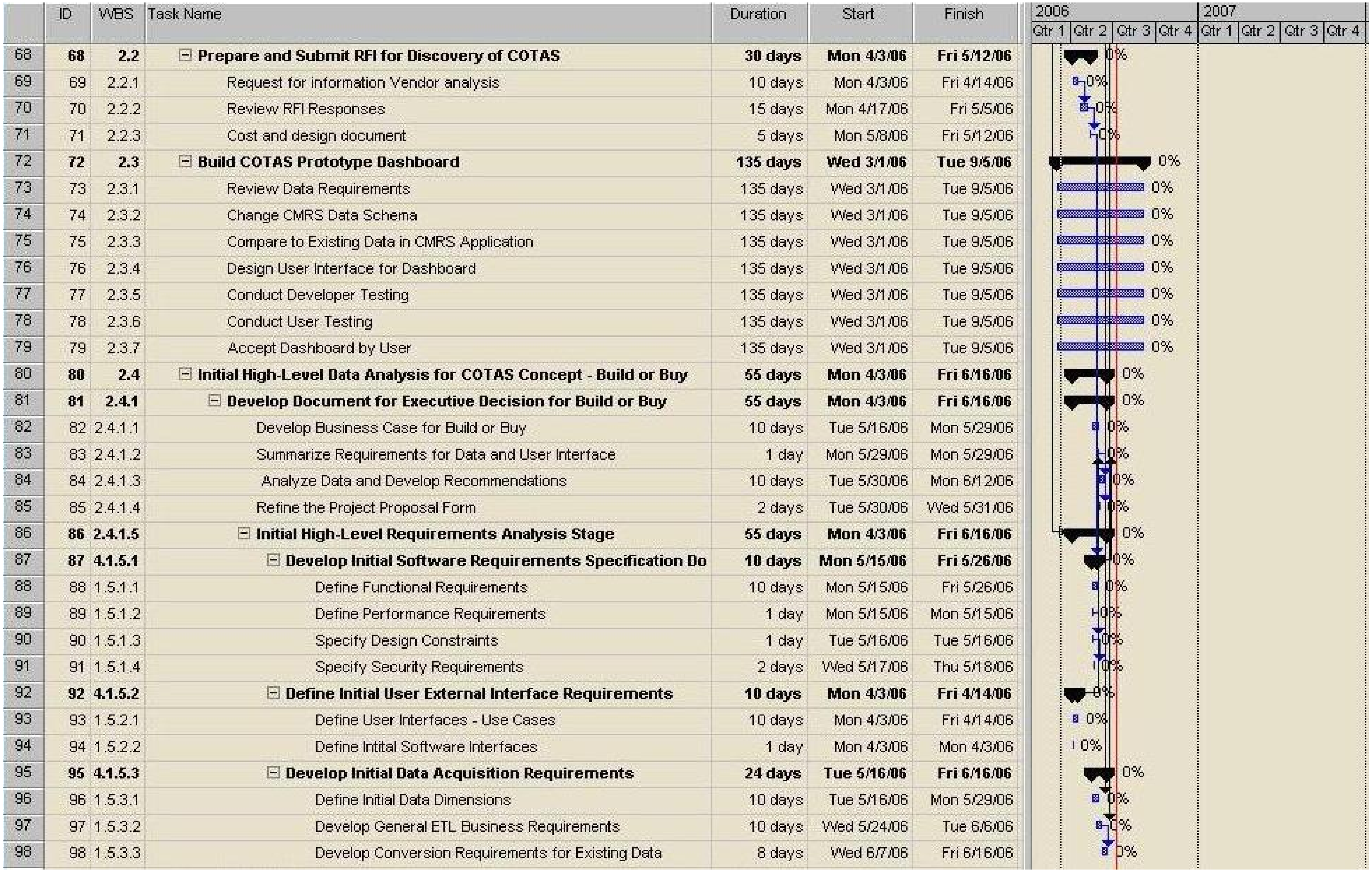
COTAS Project Planning & Initial Analysis Timeline



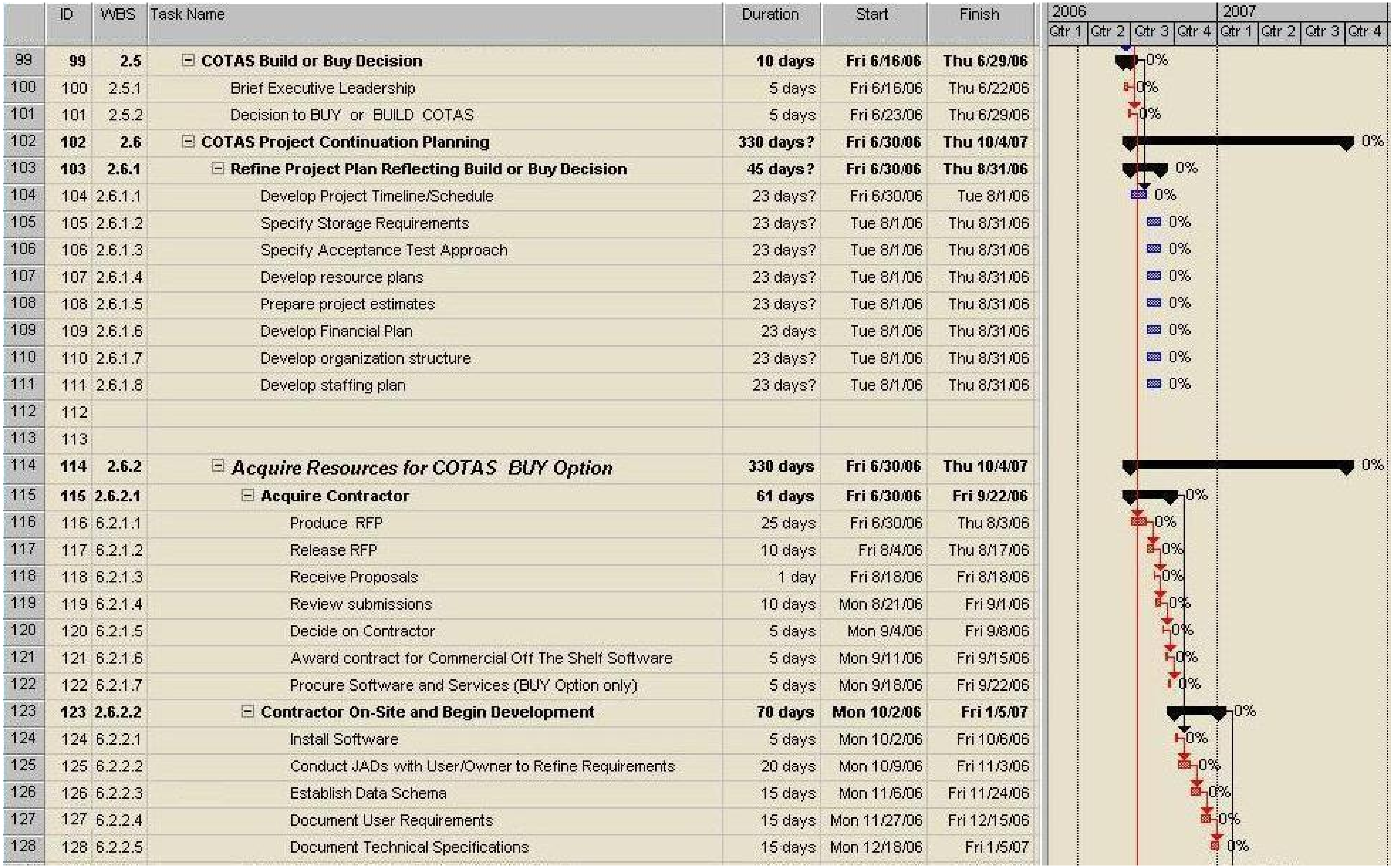
	ID	WBS	Task Name	Duration	Start	Finish
1	1	1	Project Planning to Prepare for COTAS Implementation	417 days	Wed 3/1/06	Thu 10/4/07
2	2	1.1	Project Management Plan	417 days	Wed 3/1/06	Thu 10/4/07
3	3	1.1.1	Initiating	3 days	Wed 3/1/06	Fri 3/3/06
4	4	1.1.1.1	Project Initiation	3 days	Wed 3/1/06	Fri 3/3/06
5	5	1.1.1.1	Identify goals and objectives	1 day	Wed 3/1/06	Wed 3/1/06
6	6	1.1.1.2	Document project costs and benefits	2 days	Thu 3/2/06	Fri 3/3/06
7	7	1.1.2	Planning	20 days	Mon 3/6/06	Mon 4/3/06
8	8	1.1.2.1	Develop Project Schedule	5 days	Mon 3/6/06	Fri 3/10/06
9	9	1.2.1.1	Develop resource plans	2 days	Mon 3/6/06	Tue 3/7/06
10	10	1.2.1.2	Prepare project estimates	2 days	Thu 3/9/06	Fri 3/10/06
11	11	1.1.2.2	Develop Financial Plan	2 days	Mon 3/20/06	Tue 3/21/06
12	12	1.2.2.1	Prepare financial plan	1 day	Mon 3/20/06	Mon 3/20/06
13	13	1.2.2.2	Set up standards and procedures for cost and schedule mana	1 day	Tue 3/21/06	Tue 3/21/06
14	14	1.1.2.3	Organize Project Resources	8 days	Wed 3/22/06	Mon 4/3/06
15	15	1.2.3.1	Develop organization structure	1 day	Wed 3/22/06	Wed 3/22/06
16	16	1.2.3.2	Develop staffing plan	2 days	Thu 3/23/06	Fri 3/24/06
17	17	1.2.3.3	Obtain resources	4 days	Mon 3/27/06	Thu 3/30/06
18	18	1.2.3.4	Obtain Contract Analyst(s)	0 days	Mon 4/3/06	Mon 4/3/06
19	19	1.1.3	Executing	335 days	Fri 6/23/06	Thu 10/4/07
20	20	1.1.3.1	Manage Project Data	335 days	Fri 6/23/06	Thu 10/4/07
21	21	1.3.1.1	Authorize work	335 days	Fri 6/23/06	Thu 10/4/07
22	22	1.3.1.2	Manage action items	335 days	Fri 6/23/06	Thu 10/4/07
23	23	1.3.1.3	Manage project records	335 days	Fri 6/23/06	Thu 10/4/07
24	24	1.3.1.4	Manage data items	335 days	Fri 6/23/06	Thu 10/4/07
25	25	1.3.1.5	Manage configuration items	335 days	Fri 6/23/06	Thu 10/4/07
26	26	1.3.1.6	Manage process data	335 days	Fri 6/23/06	Thu 10/4/07
27	27	1.3.1.7	Provide general office support	335 days	Fri 6/23/06	Thu 10/4/07
28	28	1.1.3.2	Manage Project Communication	335 days	Fri 6/23/06	Thu 10/4/07
29	29	1.3.2.1	Review progress	335 days	Fri 6/23/06	Thu 10/4/07
30	30	1.3.2.2	Resolve issues	335 days	Fri 6/23/06	Thu 10/4/07
31	31	1.1.3.3	Manage Team Performance	335 days	Fri 6/23/06	Thu 10/4/07
32	32	1.3.3.1	Assign responsibilities	335 days	Fri 6/23/06	Thu 10/4/07
33	33	1.3.3.2	Meet with team	335 days	Fri 6/23/06	Thu 10/4/07



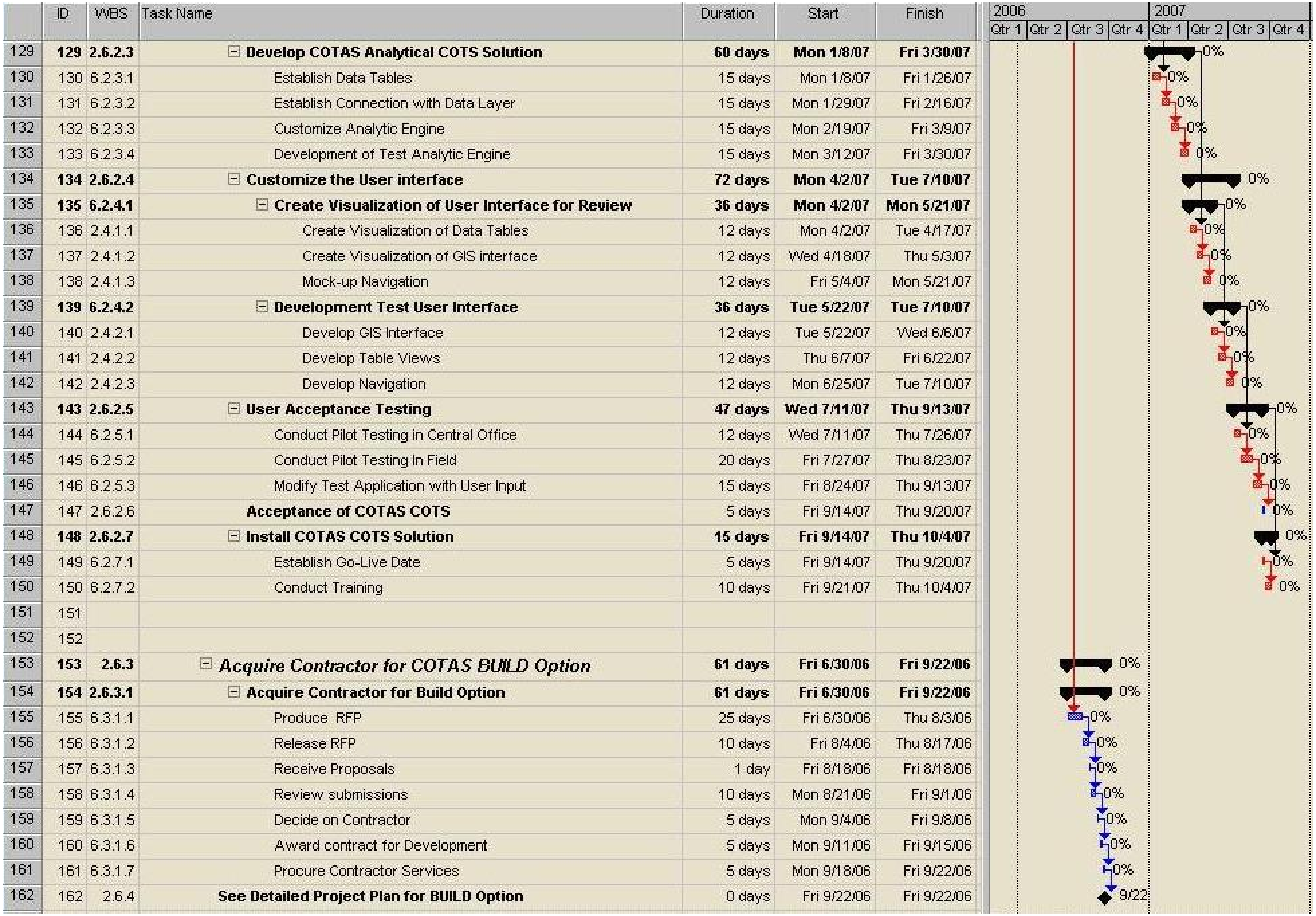
	ID	WBS	Task Name	Duration	Start	Finish
34	**34**	**1.1.3.4**	⊟ **Assure Quality**	**335 days**	**Fri 6/23/06**	**Thu 10/4/07**
35	35	1.3.4.1	Participate in walk-throughs and reviews	335 days	Fri 6/23/06	Thu 10/4/07
36	36	1.3.4.2	Conduct inspections and audits	335 days	Fri 6/23/06	Thu 10/4/07
37	37	1.3.4.3	Participate in testing	335 days	Fri 6/23/06	Thu 10/4/07
38	38	1.3.4.4	Conduct project reviews	335 days	Fri 6/23/06	Thu 10/4/07
39	**39**	**1.1.4**	⊟ **Controlling**	**391 days**	**Mon 4/3/06**	**Mon 10/1/07**
40	**40**	**1.1.4.1**	⊟ **Manage Scope and Requirements**	**391 days**	**Mon 4/3/06**	**Mon 10/1/07**
41	41	1.4.1.1	Manage scope	391 days	Mon 4/3/06	Mon 10/1/07
42	42	1.4.1.2	Manage requirements	391 days	Mon 4/3/06	Mon 10/1/07
43	43	1.4.1.3	Control decisions	391 days	Mon 4/3/06	Mon 10/1/07
44	44	1.4.1.4	Control changes	391 days	Mon 4/3/06	Mon 10/1/07
45	**45**	**1.1.4.2**	⊟ **Control Schedule**	**391 days**	**Mon 4/3/06**	**Mon 10/1/07**
46	46	1.4.2.1	Track status	391 days	Mon 4/3/06	Mon 10/1/07
47	47	1.4.2.2	Maintain work plans	391 days	Mon 4/3/06	Mon 10/1/07
48	**48**	**1.1.4.3**	⊟ **Manage Finances**	**391 days**	**Mon 4/3/06**	**Mon 10/1/07**
49	49	1.4.3.1	Monitor cost and schedule variance	391 days	Mon 4/3/06	Mon 10/1/07
50	50	1.4.3.2	Control costs	391 days	Mon 4/3/06	Mon 10/1/07
51	51	1.4.3.3	Maintain financial plan	391 days	Mon 4/3/06	Mon 10/1/07
52	**52**	**1.1.4.4**	⊟ **Produce Performance Reports**	**391 days**	**Mon 4/3/06**	**Mon 10/1/07**
53	53	1.4.4.1	Report weekly status	391 days	Mon 4/3/06	Mon 10/1/07
54	54	1.4.4.2	Report monthly status	391 days	Mon 4/3/06	Mon 10/1/07
55	**55**	**1.1.5**	⊟ **Closing**	**3 days**	**Tue 10/2/07**	**Thu 10/4/07**
56	**56**	**1.1.5.1**	⊟ **Manage Project Close**	**3 days**	**Tue 10/2/07**	**Thu 10/4/07**
57	57	1.5.1.1	Manage project acceptance	1 day	Tue 10/2/07	Tue 10/2/07
58	58	1.5.1.2	Summarize project results and lessons learned	3 days	Tue 10/2/07	Thu 10/4/07
59	59	1.5.1.3	Review and recognize team performance	1 day	Tue 10/2/07	Tue 10/2/07
60	60	1.5.1.4	Review and reconcile financial performance	3 days	Tue 10/2/07	Thu 10/4/07
61	61	1.5.1.5	Close the project records	1.5 days	Tue 10/2/07	Wed 10/3/07
62	**62**	**2**	⊟ **Initial High-Level Needs Assessment & System Design**	**417 days?**	**Wed 3/1/06**	**Thu 10/4/07**
63	**63**	**2.1**	⊟ **Data synthesis Modeling & Forecasting**	**60 days**	**Wed 3/1/06**	**Tue 5/23/06**
64	64	2.1.1	List of Indicators expected in solution	0 days	Mon 5/15/06	Mon 5/15/06
65	65	2.1.2	Data collection/Analysis	60 days	Wed 3/1/06	Tue 5/23/06
66	66	2.1.3	Statistical Modeling	60 days	Wed 3/1/06	Tue 5/23/06
67	67	2.1.4	Identification of variables / Indicators correlated to disorder	60 days	Wed 3/1/06	Tue 5/23/06



	ID	WBS	Task Name	Duration	Start	Finish
68	**68**	**2.2**	**⊟ Prepare and Submit RFI for Discovery of COTAS**	**30 days**	**Mon 4/3/06**	**Fri 5/12/06**
69	69	2.2.1	Request for information Vendor analysis	10 days	Mon 4/3/06	Fri 4/14/06
70	70	2.2.2	Review RFI Responses	15 days	Mon 4/17/06	Fri 5/5/06
71	71	2.2.3	Cost and design document	5 days	Mon 5/8/06	Fri 5/12/06
72	**72**	**2.3**	**⊟ Build COTAS Prototype Dashboard**	**135 days**	**Wed 3/1/06**	**Tue 9/5/06**
73	73	2.3.1	Review Data Requirements	135 days	Wed 3/1/06	Tue 9/5/06
74	74	2.3.2	Change CMRS Data Schema	135 days	Wed 3/1/06	Tue 9/5/06
75	75	2.3.3	Compare to Existing Data in CMRS Application	135 days	Wed 3/1/06	Tue 9/5/06
76	76	2.3.4	Design User Interface for Dashboard	135 days	Wed 3/1/06	Tue 9/5/06
77	77	2.3.5	Conduct Developer Testing	135 days	Wed 3/1/06	Tue 9/5/06
78	78	2.3.6	Conduct User Testing	135 days	Wed 3/1/06	Tue 9/5/06
79	79	2.3.7	Accept Dashboard by User	135 days	Wed 3/1/06	Tue 9/5/06
80	**80**	**2.4**	**⊟ Initial High-Level Data Analysis for COTAS Concept - Build or Buy**	**55 days**	**Mon 4/3/06**	**Fri 6/16/06**
81	**81**	**2.4.1**	**⊟ Develop Document for Executive Decision for Build or Buy**	**55 days**	**Mon 4/3/06**	**Fri 6/16/06**
82	82	2.4.1.1	Develop Business Case for Build or Buy	10 days	Tue 5/16/06	Mon 5/29/06
83	83	2.4.1.2	Summarize Requirements for Data and User Interface	1 day	Mon 5/29/06	Mon 5/29/06
84	84	2.4.1.3	Analyze Data and Develop Recommendations	10 days	Tue 5/30/06	Mon 6/12/06
85	85	2.4.1.4	Refine the Project Proposal Form	2 days	Tue 5/30/06	Wed 5/31/06
86	**86**	**2.4.1.5**	**⊟ Initial High-Level Requirements Analysis Stage**	**55 days**	**Mon 4/3/06**	**Fri 6/16/06**
87	**87**	**4.1.5.1**	**⊟ Develop Initial Software Requirements Specification Do**	**10 days**	**Mon 5/15/06**	**Fri 5/26/06**
88	88	1.5.1.1	Define Functional Requirements	10 days	Mon 5/15/06	Fri 5/26/06
89	89	1.5.1.2	Define Performance Requirements	1 day	Mon 5/15/06	Mon 5/15/06
90	90	1.5.1.3	Specify Design Constraints	1 day	Tue 5/16/06	Tue 5/16/06
91	91	1.5.1.4	Specify Security Requirements	2 days	Wed 5/17/06	Thu 5/18/06
92	**92**	**4.1.5.2**	**⊟ Define Initial User External Interface Requirements**	**10 days**	**Mon 4/3/06**	**Fri 4/14/06**
93	93	1.5.2.1	Define User Interfaces - Use Cases	10 days	Mon 4/3/06	Fri 4/14/06
94	94	1.5.2.2	Define Intital Software Interfaces	1 day	Mon 4/3/06	Mon 4/3/06
95	**95**	**4.1.5.3**	**⊟ Develop Initial Data Acquisition Requirements**	**24 days**	**Tue 5/16/06**	**Fri 6/16/06**
96	96	1.5.3.1	Define Initial Data Dimensions	10 days	Tue 5/16/06	Mon 5/29/06
97	97	1.5.3.2	Develop General ETL Business Requirements	10 days	Wed 5/24/06	Tue 6/6/06
98	98	1.5.3.3	Develop Conversion Requirements for Existing Data	8 days	Wed 6/7/06	Fri 6/16/06

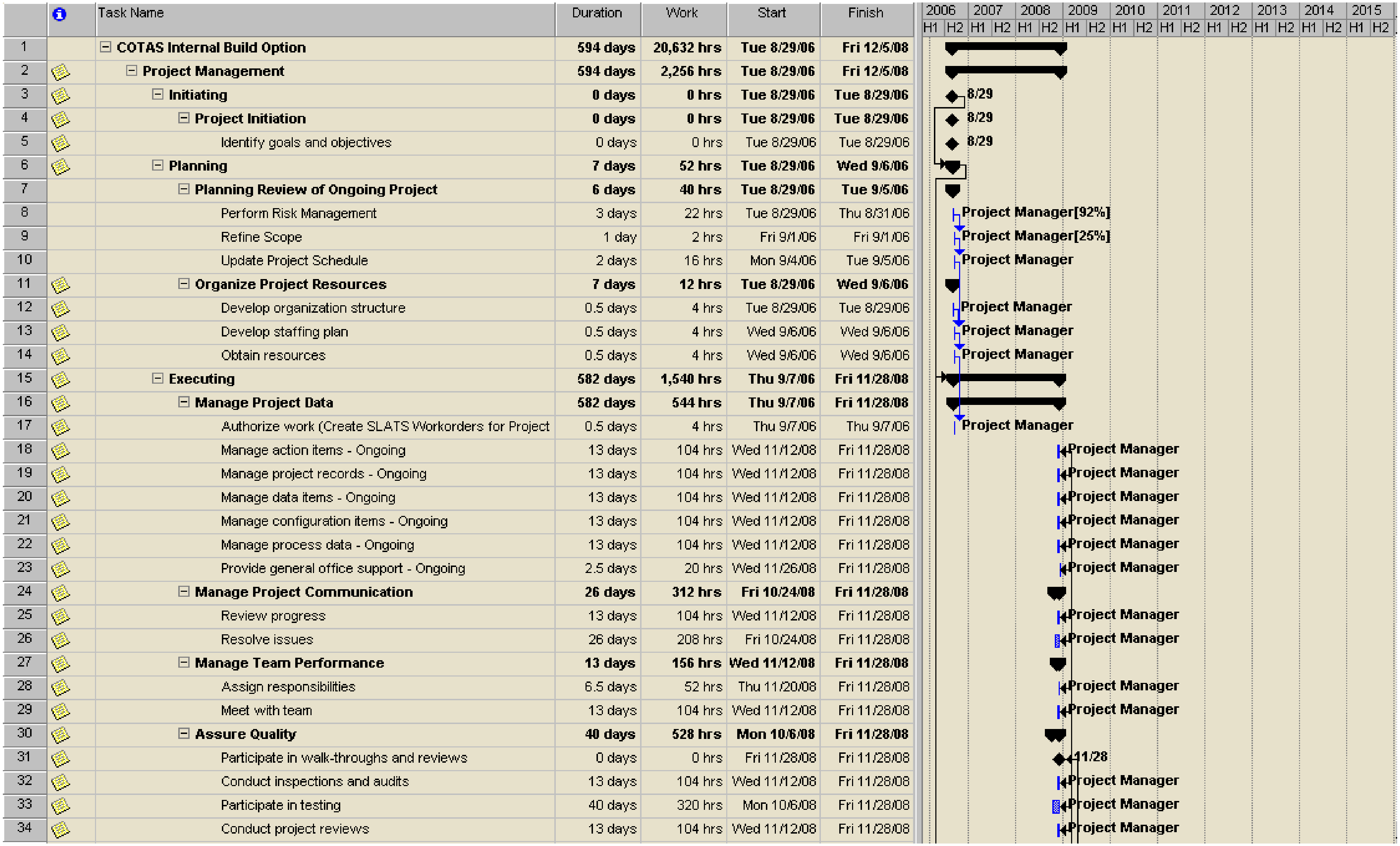


	ID	WBS	Task Name	Duration	Start	Finish
99	**99**	**2.5**	⊟ **COTAS Build or Buy Decision**	**10 days**	**Fri 6/16/06**	**Thu 6/29/06**
100	100	2.5.1	Brief Executive Leadership	5 days	Fri 6/16/06	Thu 6/22/06
101	101	2.5.2	Decision to BUY or BUILD COTAS	5 days	Fri 6/23/06	Thu 6/29/06
102	**102**	**2.6**	⊟ **COTAS Project Continuation Planning**	**330 days?**	**Fri 6/30/06**	**Thu 10/4/07**
103	**103**	**2.6.1**	⊟ **Refine Project Plan Reflecting Build or Buy Decision**	**45 days?**	**Fri 6/30/06**	**Thu 8/31/06**
104	104	2.6.1.1	Develop Project Timeline/Schedule	23 days?	Fri 6/30/06	Tue 8/1/06
105	105	2.6.1.2	Specify Storage Requirements	23 days?	Tue 8/1/06	Thu 8/31/06
106	106	2.6.1.3	Specify Acceptance Test Approach	23 days?	Tue 8/1/06	Thu 8/31/06
107	107	2.6.1.4	Develop resource plans	23 days?	Tue 8/1/06	Thu 8/31/06
108	108	2.6.1.5	Prepare project estimates	23 days?	Tue 8/1/06	Thu 8/31/06
109	109	2.6.1.6	Develop Financial Plan	23 days	Tue 8/1/06	Thu 8/31/06
110	110	2.6.1.7	Develop organization structure	23 days?	Tue 8/1/06	Thu 8/31/06
111	111	2.6.1.8	Develop staffing plan	23 days?	Tue 8/1/06	Thu 8/31/06
112	112					
113	113					
114	**114**	**2.6.2**	⊟ ***Acquire Resources for COTAS BUY Option***	**330 days**	**Fri 6/30/06**	**Thu 10/4/07**
115	**115**	**2.6.2.1**	⊟ **Acquire Contractor**	**61 days**	**Fri 6/30/06**	**Fri 9/22/06**
116	116	6.2.1.1	Produce RFP	25 days	Fri 6/30/06	Thu 8/3/06
117	117	6.2.1.2	Release RFP	10 days	Fri 8/4/06	Thu 8/17/06
118	118	6.2.1.3	Receive Proposals	1 day	Fri 8/18/06	Fri 8/18/06
119	119	6.2.1.4	Review submissions	10 days	Mon 8/21/06	Fri 9/1/06
120	120	6.2.1.5	Decide on Contractor	5 days	Mon 9/4/06	Fri 9/8/06
121	121	6.2.1.6	Award contract for Commercial Off The Shelf Software	5 days	Mon 9/11/06	Fri 9/15/06
122	122	6.2.1.7	Procure Software and Services (BUY Option only)	5 days	Mon 9/18/06	Fri 9/22/06
123	**123**	**2.6.2.2**	⊟ **Contractor On-Site and Begin Development**	**70 days**	**Mon 10/2/06**	**Fri 1/5/07**
124	124	6.2.2.1	Install Software	5 days	Mon 10/2/06	Fri 10/6/06
125	125	6.2.2.2	Conduct JADs with User/Owner to Refine Requirements	20 days	Mon 10/9/06	Fri 11/3/06
126	126	6.2.2.3	Establish Data Schema	15 days	Mon 11/6/06	Fri 11/24/06
127	127	6.2.2.4	Document User Requirements	15 days	Mon 11/27/06	Fri 12/15/06
128	128	6.2.2.5	Document Technical Specifications	15 days	Mon 12/18/06	Fri 1/5/07

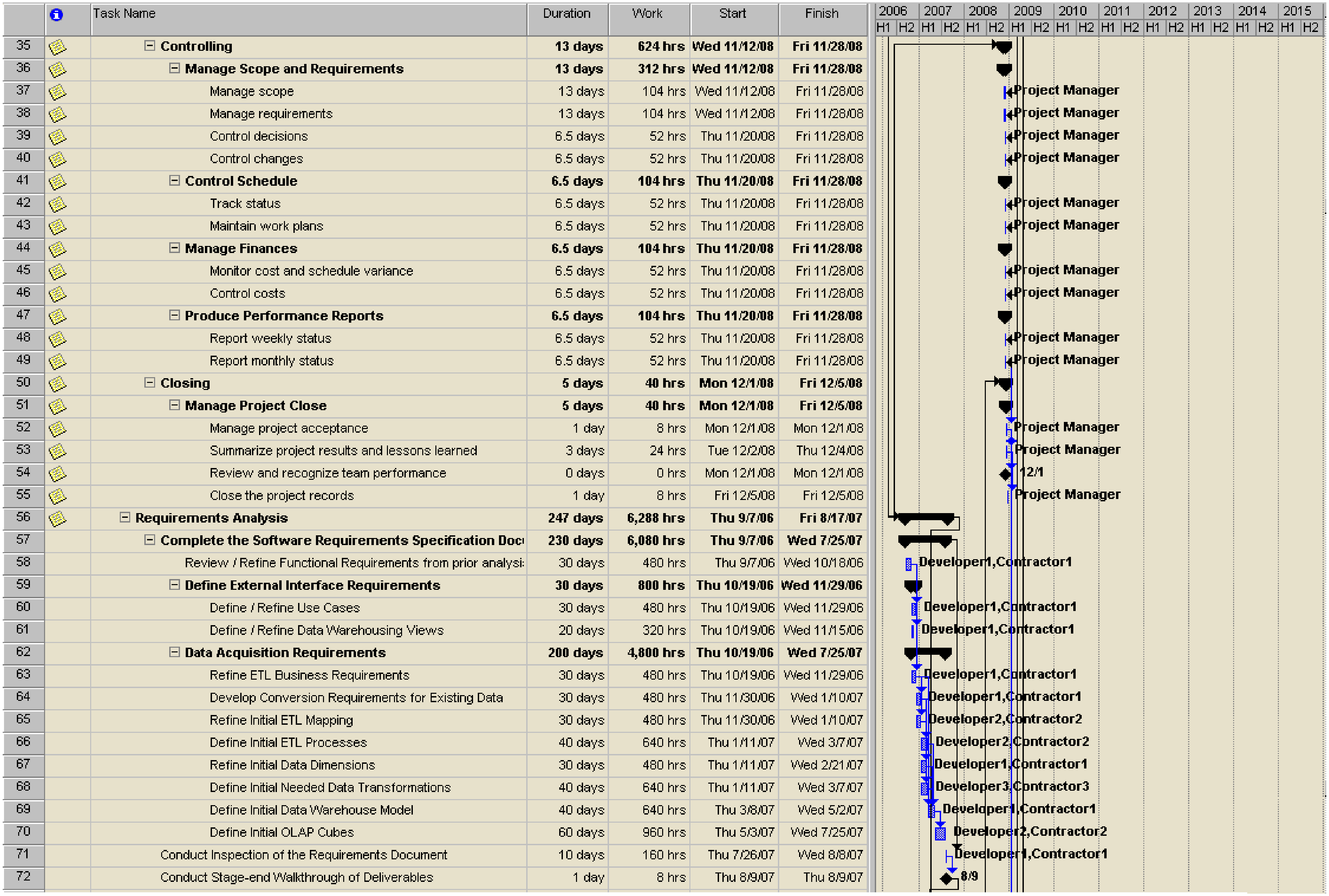


	ID	WBS	Task Name	Duration	Start	Finish
129	**129**	**2.6.2.3**	⊟ **Develop COTAS Analytical COTS Solution**	**60 days**	**Mon 1/8/07**	**Fri 3/30/07**
130	130	6.2.3.1	Establish Data Tables	15 days	Mon 1/8/07	Fri 1/26/07
131	131	6.2.3.2	Establish Connection with Data Layer	15 days	Mon 1/29/07	Fri 2/16/07
132	132	6.2.3.3	Customize Analytic Engine	15 days	Mon 2/19/07	Fri 3/9/07
133	133	6.2.3.4	Development of Test Analytic Engine	15 days	Mon 3/12/07	Fri 3/30/07
134	**134**	**2.6.2.4**	⊟ **Customize the User interface**	**72 days**	**Mon 4/2/07**	**Tue 7/10/07**
135	**135**	**6.2.4.1**	⊟ **Create Visualization of User Interface for Review**	**36 days**	**Mon 4/2/07**	**Mon 5/21/07**
136	136	2.4.1.1	Create Visualization of Data Tables	12 days	Mon 4/2/07	Tue 4/17/07
137	137	2.4.1.2	Create Visualization of GIS interface	12 days	Wed 4/18/07	Thu 5/3/07
138	138	2.4.1.3	Mock-up Navigation	12 days	Fri 5/4/07	Mon 5/21/07
139	**139**	**6.2.4.2**	⊟ **Development Test User Interface**	**36 days**	**Tue 5/22/07**	**Tue 7/10/07**
140	140	2.4.2.1	Develop GIS Interface	12 days	Tue 5/22/07	Wed 6/6/07
141	141	2.4.2.2	Develop Table Views	12 days	Thu 6/7/07	Fri 6/22/07
142	142	2.4.2.3	Develop Navigation	12 days	Mon 6/25/07	Tue 7/10/07
143	**143**	**2.6.2.5**	⊟ **User Acceptance Testing**	**47 days**	**Wed 7/11/07**	**Thu 9/13/07**
144	144	6.2.5.1	Conduct Pilot Testing in Central Office	12 days	Wed 7/11/07	Thu 7/26/07
145	145	6.2.5.2	Conduct Pilot Testing In Field	20 days	Fri 7/27/07	Thu 8/23/07
146	146	6.2.5.3	Modify Test Application with User Input	15 days	Fri 8/24/07	Thu 9/13/07
147	147	2.6.2.6	**Acceptance of COTAS COTS**	5 days	Fri 9/14/07	Thu 9/20/07
148	**148**	**2.6.2.7**	⊟ **Install COTAS COTS Solution**	**15 days**	**Fri 9/14/07**	**Thu 10/4/07**
149	149	6.2.7.1	Establish Go-Live Date	5 days	Fri 9/14/07	Thu 9/20/07
150	150	6.2.7.2	Conduct Training	10 days	Fri 9/21/07	Thu 10/4/07
151	151					
152	152					
153	**153**	**2.6.3**	⊟ ***Acquire Contractor for COTAS BUILD Option***	**61 days**	**Fri 6/30/06**	**Fri 9/22/06**
154	**154**	**2.6.3.1**	⊟ **Acquire Contractor for Build Option**	**61 days**	**Fri 6/30/06**	**Fri 9/22/06**
155	155	6.3.1.1	Produce RFP	25 days	Fri 6/30/06	Thu 8/3/06
156	156	6.3.1.2	Release RFP	10 days	Fri 8/4/06	Thu 8/17/06
157	157	6.3.1.3	Receive Proposals	1 day	Fri 8/18/06	Fri 8/18/06
158	158	6.3.1.4	Review submissions	10 days	Mon 8/21/06	Fri 9/1/06
159	159	6.3.1.5	Decide on Contractor	5 days	Mon 9/4/06	Fri 9/8/06
160	160	6.3.1.6	Award contract for Development	5 days	Mon 9/11/06	Fri 9/15/06
161	161	6.3.1.7	Procure Contractor Services	5 days	Mon 9/18/06	Fri 9/22/06
162	162	2.6.4	**See Detailed Project Plan for BUILD Option**	0 days	Fri 9/22/06	Fri 9/22/06

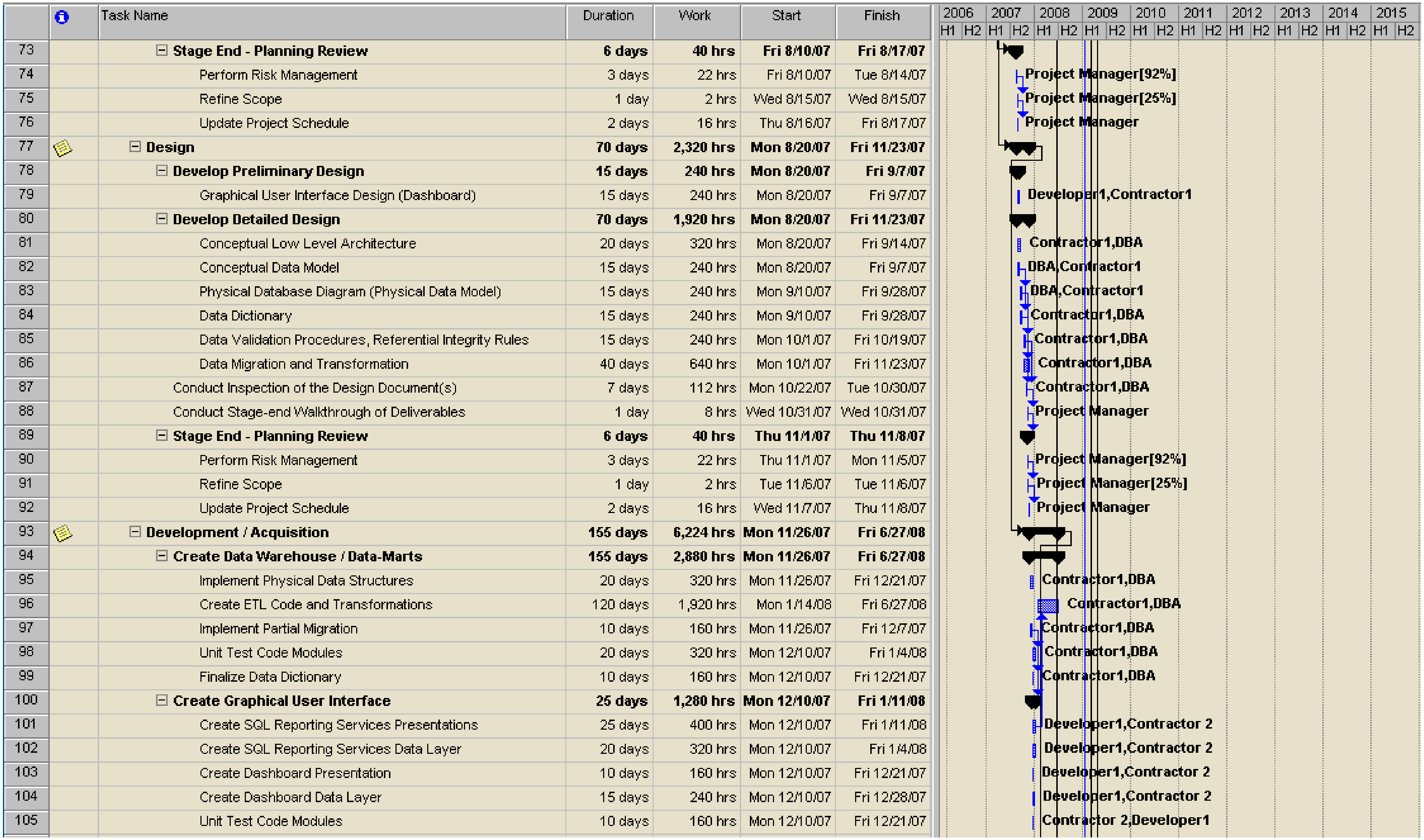
COTAS Build Option Timeline



	ℹ	Task Name	Duration	Work	Start	Finish
1		⊟ **COTAS Internal Build Option**	**594 days**	**20,632 hrs**	**Tue 8/29/06**	**Fri 12/5/08**
2	📝	⊟ **Project Management**	**594 days**	**2,256 hrs**	**Tue 8/29/06**	**Fri 12/5/08**
3	📝	⊟ **Initiating**	**0 days**	**0 hrs**	**Tue 8/29/06**	**Tue 8/29/06**
4	📝	⊟ **Project Initiation**	**0 days**	**0 hrs**	**Tue 8/29/06**	**Tue 8/29/06**
5	📝	Identify goals and objectives	0 days	0 hrs	Tue 8/29/06	Tue 8/29/06
6	📝	⊟ **Planning**	**7 days**	**52 hrs**	**Tue 8/29/06**	**Wed 9/6/06**
7		⊟ **Planning Review of Ongoing Project**	**6 days**	**40 hrs**	**Tue 8/29/06**	**Tue 9/5/06**
8		Perform Risk Management	3 days	22 hrs	Tue 8/29/06	Thu 8/31/06
9		Refine Scope	1 day	2 hrs	Fri 9/1/06	Fri 9/1/06
10		Update Project Schedule	2 days	16 hrs	Mon 9/4/06	Tue 9/5/06
11	📝	⊟ **Organize Project Resources**	**7 days**	**12 hrs**	**Tue 8/29/06**	**Wed 9/6/06**
12	📝	Develop organization structure	0.5 days	4 hrs	Tue 8/29/06	Tue 8/29/06
13	📝	Develop staffing plan	0.5 days	4 hrs	Wed 9/6/06	Wed 9/6/06
14	📝	Obtain resources	0.5 days	4 hrs	Wed 9/6/06	Wed 9/6/06
15	📝	⊟ **Executing**	**582 days**	**1,540 hrs**	**Thu 9/7/06**	**Fri 11/28/08**
16	📝	⊟ **Manage Project Data**	**582 days**	**544 hrs**	**Thu 9/7/06**	**Fri 11/28/08**
17	📝	Authorize work (Create SLATS Workorders for Project	0.5 days	4 hrs	Thu 9/7/06	Thu 9/7/06
18	📝	Manage action items - Ongoing	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
19	📝	Manage project records - Ongoing	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
20	📝	Manage data items - Ongoing	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
21	📝	Manage configuration items - Ongoing	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
22	📝	Manage process data - Ongoing	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
23	📝	Provide general office support - Ongoing	2.5 days	20 hrs	Wed 11/26/08	Fri 11/28/08
24	📝	⊟ **Manage Project Communication**	**26 days**	**312 hrs**	**Fri 10/24/08**	**Fri 11/28/08**
25	📝	Review progress	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
26	📝	Resolve issues	26 days	208 hrs	Fri 10/24/08	Fri 11/28/08
27	📝	⊟ **Manage Team Performance**	**13 days**	**156 hrs**	**Wed 11/12/08**	**Fri 11/28/08**
28	📝	Assign responsibilities	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
29	📝	Meet with team	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
30	📝	⊟ **Assure Quality**	**40 days**	**528 hrs**	**Mon 10/6/08**	**Fri 11/28/08**
31	📝	Participate in walk-throughs and reviews	0 days	0 hrs	Fri 11/28/08	Fri 11/28/08
32	📝	Conduct inspections and audits	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
33	📝	Participate in testing	40 days	320 hrs	Mon 10/6/08	Fri 11/28/08
34	📝	Conduct project reviews	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08



	ℹ	Task Name	Duration	Work	Start	Finish
35	📝	⊟ **Controlling**	**13 days**	**624 hrs**	**Wed 11/12/08**	**Fri 11/28/08**
36	📝	⊟ **Manage Scope and Requirements**	**13 days**	**312 hrs**	**Wed 11/12/08**	**Fri 11/28/08**
37	📝	Manage scope	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
38	📝	Manage requirements	13 days	104 hrs	Wed 11/12/08	Fri 11/28/08
39	📝	Control decisions	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
40	📝	Control changes	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
41	📝	⊟ **Control Schedule**	**6.5 days**	**104 hrs**	**Thu 11/20/08**	**Fri 11/28/08**
42	📝	Track status	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
43	📝	Maintain work plans	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
44	📝	⊟ **Manage Finances**	**6.5 days**	**104 hrs**	**Thu 11/20/08**	**Fri 11/28/08**
45	📝	Monitor cost and schedule variance	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
46	📝	Control costs	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
47	📝	⊟ **Produce Performance Reports**	**6.5 days**	**104 hrs**	**Thu 11/20/08**	**Fri 11/28/08**
48	📝	Report weekly status	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
49	📝	Report monthly status	6.5 days	52 hrs	Thu 11/20/08	Fri 11/28/08
50	📝	⊟ **Closing**	**5 days**	**40 hrs**	**Mon 12/1/08**	**Fri 12/5/08**
51	📝	⊟ **Manage Project Close**	**5 days**	**40 hrs**	**Mon 12/1/08**	**Fri 12/5/08**
52	📝	Manage project acceptance	1 day	8 hrs	Mon 12/1/08	Mon 12/1/08
53	📝	Summarize project results and lessons learned	3 days	24 hrs	Tue 12/2/08	Thu 12/4/08
54	📝	Review and recognize team performance	0 days	0 hrs	Mon 12/1/08	Mon 12/1/08
55	📝	Close the project records	1 day	8 hrs	Fri 12/5/08	Fri 12/5/08
56	📝	⊟ **Requirements Analysis**	**247 days**	**6,288 hrs**	**Thu 9/7/06**	**Fri 8/17/07**
57		⊟ **Complete the Software Requirements Specification Doc**	**230 days**	**6,080 hrs**	**Thu 9/7/06**	**Wed 7/25/07**
58		Review / Refine Functional Requirements from prior analysi	30 days	480 hrs	Thu 9/7/06	Wed 10/18/06
59		⊟ **Define External Interface Requirements**	**30 days**	**800 hrs**	**Thu 10/19/06**	**Wed 11/29/06**
60		Define / Refine Use Cases	30 days	480 hrs	Thu 10/19/06	Wed 11/29/06
61		Define / Refine Data Warehousing Views	20 days	320 hrs	Thu 10/19/06	Wed 11/15/06
62		⊟ **Data Acquisition Requirements**	**200 days**	**4,800 hrs**	**Thu 10/19/06**	**Wed 7/25/07**
63		Refine ETL Business Requirements	30 days	480 hrs	Thu 10/19/06	Wed 11/29/06
64		Develop Conversion Requirements for Existing Data	30 days	480 hrs	Thu 11/30/06	Wed 1/10/07
65		Refine Initial ETL Mapping	30 days	480 hrs	Thu 11/30/06	Wed 1/10/07
66		Define Initial ETL Processes	40 days	640 hrs	Thu 1/11/07	Wed 3/7/07
67		Refine Initial Data Dimensions	30 days	480 hrs	Thu 1/11/07	Wed 2/21/07
68		Define Initial Needed Data Transformations	40 days	640 hrs	Thu 1/11/07	Wed 3/7/07
69		Define Initial Data Warehouse Model	40 days	640 hrs	Thu 3/8/07	Wed 5/2/07
70		Define Initial OLAP Cubes	60 days	960 hrs	Thu 5/3/07	Wed 7/25/07
71		Conduct Inspection of the Requirements Document	10 days	160 hrs	Thu 7/26/07	Wed 8/8/07
72		Conduct Stage-end Walkthrough of Deliverables	1 day	8 hrs	Thu 8/9/07	Thu 8/9/07



		Task Name	Duration	Work	Start	Finish
73		**⊟ Stage End - Planning Review**	**6 days**	**40 hrs**	**Fri 8/10/07**	**Fri 8/17/07**
74		Perform Risk Management	3 days	22 hrs	Fri 8/10/07	Tue 8/14/07
75		Refine Scope	1 day	2 hrs	Wed 8/15/07	Wed 8/15/07
76		Update Project Schedule	2 days	16 hrs	Thu 8/16/07	Fri 8/17/07
77		**⊟ Design**	**70 days**	**2,320 hrs**	**Mon 8/20/07**	**Fri 11/23/07**
78		**⊟ Develop Preliminary Design**	**15 days**	**240 hrs**	**Mon 8/20/07**	**Fri 9/7/07**
79		Graphical User Interface Design (Dashboard)	15 days	240 hrs	Mon 8/20/07	Fri 9/7/07
80		**⊟ Develop Detailed Design**	**70 days**	**1,920 hrs**	**Mon 8/20/07**	**Fri 11/23/07**
81		Conceptual Low Level Architecture	20 days	320 hrs	Mon 8/20/07	Fri 9/14/07
82		Conceptual Data Model	15 days	240 hrs	Mon 8/20/07	Fri 9/7/07
83		Physical Database Diagram (Physical Data Model)	15 days	240 hrs	Mon 9/10/07	Fri 9/28/07
84		Data Dictionary	15 days	240 hrs	Mon 9/10/07	Fri 9/28/07
85		Data Validation Procedures, Referential Integrity Rules	15 days	240 hrs	Mon 10/1/07	Fri 10/19/07
86		Data Migration and Transformation	40 days	640 hrs	Mon 10/1/07	Fri 11/23/07
87		Conduct Inspection of the Design Document(s)	7 days	112 hrs	Mon 10/22/07	Tue 10/30/07
88		Conduct Stage-end Walkthrough of Deliverables	1 day	8 hrs	Wed 10/31/07	Wed 10/31/07
89		**⊟ Stage End - Planning Review**	**6 days**	**40 hrs**	**Thu 11/1/07**	**Thu 11/8/07**
90		Perform Risk Management	3 days	22 hrs	Thu 11/1/07	Mon 11/5/07
91		Refine Scope	1 day	2 hrs	Tue 11/6/07	Tue 11/6/07
92		Update Project Schedule	2 days	16 hrs	Wed 11/7/07	Thu 11/8/07
93		**⊟ Development / Acquisition**	**155 days**	**6,224 hrs**	**Mon 11/26/07**	**Fri 6/27/08**
94		**⊟ Create Data Warehouse / Data-Marts**	**155 days**	**2,880 hrs**	**Mon 11/26/07**	**Fri 6/27/08**
95		Implement Physical Data Structures	20 days	320 hrs	Mon 11/26/07	Fri 12/21/07
96		Create ETL Code and Transformations	120 days	1,920 hrs	Mon 1/14/08	Fri 6/27/08
97		Implement Partial Migration	10 days	160 hrs	Mon 11/26/07	Fri 12/7/07
98		Unit Test Code Modules	20 days	320 hrs	Mon 12/10/07	Fri 1/4/08
99		Finalize Data Dictionary	10 days	160 hrs	Mon 12/10/07	Fri 12/21/07
100		**⊟ Create Graphical User Interface**	**25 days**	**1,280 hrs**	**Mon 12/10/07**	**Fri 1/11/08**
101		Create SQL Reporting Services Presentations	25 days	400 hrs	Mon 12/10/07	Fri 1/11/08
102		Create SQL Reporting Services Data Layer	20 days	320 hrs	Mon 12/10/07	Fri 1/4/08
103		Create Dashboard Presentation	10 days	160 hrs	Mon 12/10/07	Fri 12/21/07
104		Create Dashboard Data Layer	15 days	240 hrs	Mon 12/10/07	Fri 12/28/07
105		Unit Test Code Modules	10 days	160 hrs	Mon 12/10/07	Fri 12/21/07

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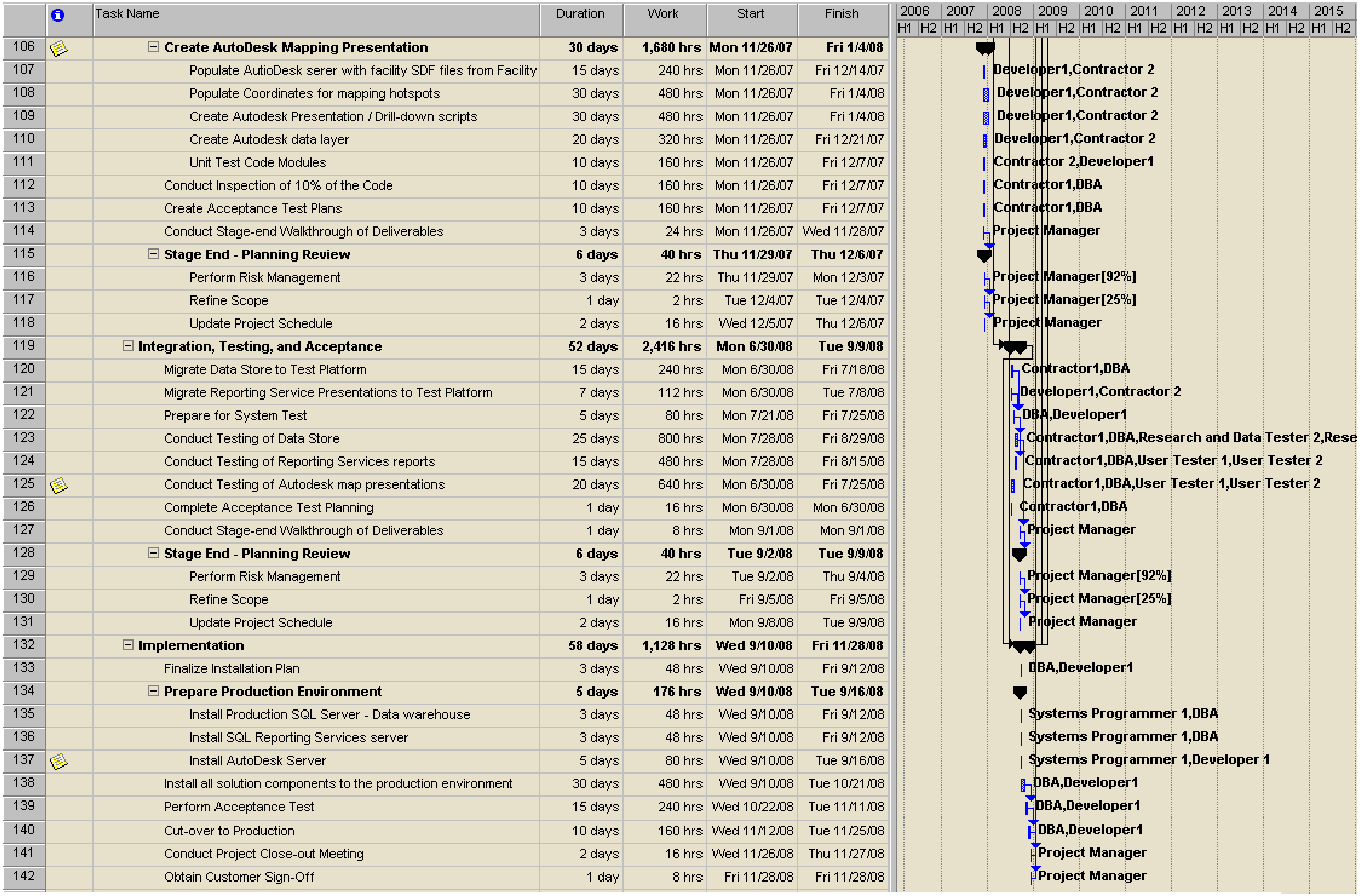
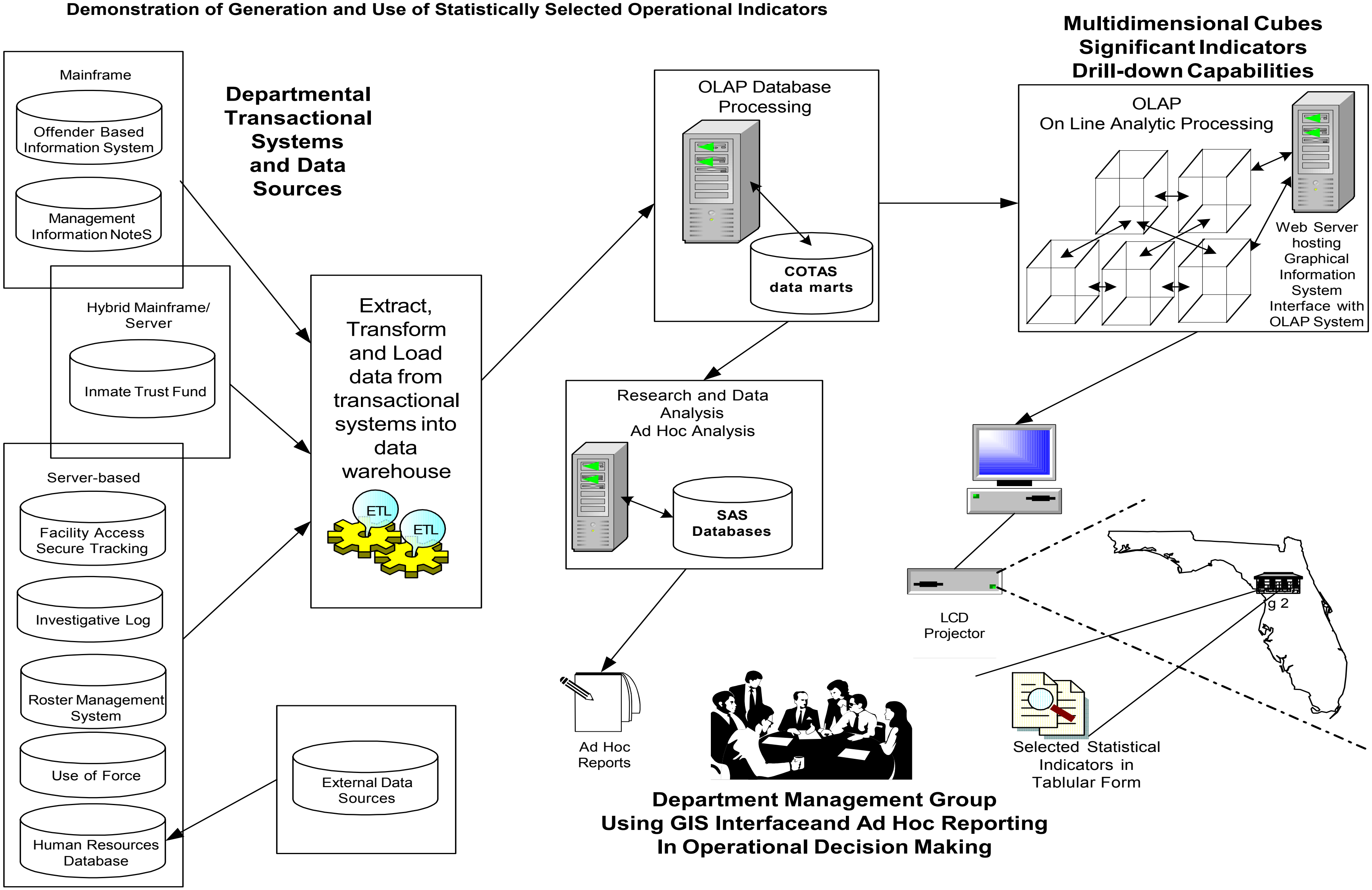


	ℹ	Task Name	Duration	Work	Start	Finish
106	📝	**⊟ Create AutoDesk Mapping Presentation**	**30 days**	**1,680 hrs**	**Mon 11/26/07**	**Fri 1/4/08**
107		Populate AutioDesk serer with facility SDF files from Facility	15 days	240 hrs	Mon 11/26/07	Fri 12/14/07
108		Populate Coordinates for mapping hotspots	30 days	480 hrs	Mon 11/26/07	Fri 1/4/08
109		Create Autodesk Presentation / Drill-down scripts	30 days	480 hrs	Mon 11/26/07	Fri 1/4/08
110		Create Autodesk data layer	20 days	320 hrs	Mon 11/26/07	Fri 12/21/07
111		Unit Test Code Modules	10 days	160 hrs	Mon 11/26/07	Fri 12/7/07
112		Conduct Inspection of 10% of the Code	10 days	160 hrs	Mon 11/26/07	Fri 12/7/07
113		Create Acceptance Test Plans	10 days	160 hrs	Mon 11/26/07	Fri 12/7/07
114		Conduct Stage-end Walkthrough of Deliverables	3 days	24 hrs	Mon 11/26/07	Wed 11/28/07
115		**⊟ Stage End - Planning Review**	**6 days**	**40 hrs**	**Thu 11/29/07**	**Thu 12/6/07**
116		Perform Risk Management	3 days	22 hrs	Thu 11/29/07	Mon 12/3/07
117		Refine Scope	1 day	2 hrs	Tue 12/4/07	Tue 12/4/07
118		Update Project Schedule	2 days	16 hrs	Wed 12/5/07	Thu 12/6/07
119		**⊟ Integration, Testing, and Acceptance**	**52 days**	**2,416 hrs**	**Mon 6/30/08**	**Tue 9/9/08**
120		Migrate Data Store to Test Platform	15 days	240 hrs	Mon 6/30/08	Fri 7/18/08
121		Migrate Reporting Service Presentations to Test Platform	7 days	112 hrs	Mon 6/30/08	Tue 7/8/08
122		Prepare for System Test	5 days	80 hrs	Mon 7/21/08	Fri 7/25/08
123		Conduct Testing of Data Store	25 days	800 hrs	Mon 7/28/08	Fri 8/29/08
124		Conduct Testing of Reporting Services reports	15 days	480 hrs	Mon 7/28/08	Fri 8/15/08
125	📝	Conduct Testing of Autodesk map presentations	20 days	640 hrs	Mon 6/30/08	Fri 7/25/08
126		Complete Acceptance Test Planning	1 day	16 hrs	Mon 6/30/08	Mon 6/30/08
127		Conduct Stage-end Walkthrough of Deliverables	1 day	8 hrs	Mon 9/1/08	Mon 9/1/08
128		**⊟ Stage End - Planning Review**	**6 days**	**40 hrs**	**Tue 9/2/08**	**Tue 9/9/08**
129		Perform Risk Management	3 days	22 hrs	Tue 9/2/08	Thu 9/4/08
130		Refine Scope	1 day	2 hrs	Fri 9/5/08	Fri 9/5/08
131		Update Project Schedule	2 days	16 hrs	Mon 9/8/08	Tue 9/9/08
132		**⊟ Implementation**	**58 days**	**1,128 hrs**	**Wed 9/10/08**	**Fri 11/28/08**
133		Finalize Installation Plan	3 days	48 hrs	Wed 9/10/08	Fri 9/12/08
134		**⊟ Prepare Production Environment**	**5 days**	**176 hrs**	**Wed 9/10/08**	**Tue 9/16/08**
135		Install Production SQL Server - Data warehouse	3 days	48 hrs	Wed 9/10/08	Fri 9/12/08
136		Install SQL Reporting Services server	3 days	48 hrs	Wed 9/10/08	Fri 9/12/08
137	📝	Install AutoDesk Server	5 days	80 hrs	Wed 9/10/08	Tue 9/16/08
138		Install all solution components to the production environment	30 days	480 hrs	Wed 9/10/08	Tue 10/21/08
139		Perform Acceptance Test	15 days	240 hrs	Wed 10/22/08	Tue 11/11/08
140		Cut-over to Production	10 days	160 hrs	Wed 11/12/08	Tue 11/25/08
141		Conduct Project Close-out Meeting	2 days	16 hrs	Wed 11/26/08	Thu 11/27/08
142		Obtain Customer Sign-Off	1 day	8 hrs	Fri 11/28/08	Fri 11/28/08

COTAS Database/Processes/Application Overview

Demonstration of Generation and Use of Statistically Selected Operational Indicators


Mainframe
Offender Based Information System
Management Information NoteS
Hybrid Mainframe/ Server
Inmate Trust Fund
Server-based
Facility Access Secure Tracking
Investigative Log
Roster Management System
Use of Force
Human Resources Database
External Data Sources
Departmental Transactional Systems and Data Sources
Extract, Transform and Load data from transactional systems into data warehouse
ETL
ETL
OLAP Database Processing
COTAS data marts
Multidimensional Cubes
Significant Indicators
Drill-down Capabilities
OLAP
On Line Analytic Processing
Web Server hosting Graphical Information System Interface with OLAP System
Research and Data Analysis
Ad Hoc Analysis
SAS Databases
Ad Hoc Reports
LCD Projector
g 2
Selected Statistical Indicators in Tablular Form
Department Management Group
Using GIS Interfaceand Ad Hoc Reporting
In Operational Decision Making

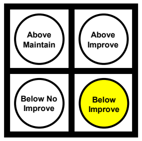
Departmental Overview
Prototype – COTAS Dashboard

Internal Performance Indices

Inmate Disruption Index

INDI Score 🟡
Disciplinary Reports 🟢
Escapes 🔴
Close Management 🟢

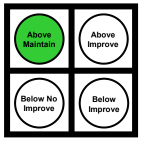
Admin Confinement 🟡
Disc Confinement 🟢
Security Rating 🔴
Wrk/Pgm Rating 🟢



Facility Capacity Index

Gender 🟡
Secure Housing 🟢
General Population 🔴
Medical 🟢

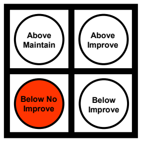
Mental Health 🟡
Child Nutrition 🟢
Faith & Character 🔴
Young Adult 🟢



Inmate Management Index

Recept Placement 🟡
Program Placement 🟢
Housing Placement 🔴
Custody Placement 🟢

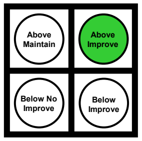
O/S Work Placement 🟡
Wrk Rel Placement 🟢
I/S Wrk Placement 🔴
Grievance Rate 🟢



Staff Turbulence Index

Staffing Ratio 🟡
Working Ratio 🟢
Training Ratio 🔴
Probationary Ratio 🟢

Disciplinary Ratio 🟡
Turnover Ratio 🟢
Satisfaction Ratio 🔴
DR Non-Violent Rate 🟢

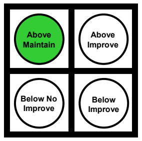


External Performance Indices

Outreach Index

Educating/Informing 🟡
Recruiting 🟢
Victim Support 🟢
○

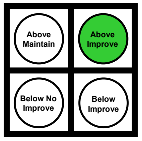
Facility Tours 🟡
Staff Volunteerism 🟢
Charitable Campaign 🔴
○



In-reach Index

Volunteer Hours 🟡
Visitation 🟢
Inmate/Child PGM 🔴
○

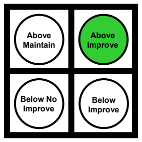
Religious Ed Pgms 🟡
Collage/University collaboration 🟢
○
○



External Support Index

State Agencies 🟡
County Governmnt 🟢
Municipal Governmt 🔴
○

Law Enforcement 🟡
Emergency Respns 🟢
Mutual Aid 🔴
○



This is the initial proposed prototype for the graphical display of information.

- The upper right quadrant (green) indicates the index is performing above standards and is improving over previous time period.
- The upper left quadrant (green) indicates the index is performing above standards, but not improving.
- The lower left quadrant (red) is below standards and is not improving.
- The lower right quadrant (yellow) indicates that the index is improving, but is still below standards.